

CALIFORNIA HIGH-SPEED RAIL

Palmdale to Burbank Supplemental Alternatives Analysis Report

June 2015



CALIFORNIA
High-Speed Rail Authority



U.S. Department of Transportation
Federal Railroad Administration



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California High-Speed Rail Project



Palmdale to Burbank

**SUPPLEMENTAL ALTERNATIVES
ANALYSIS REPORT**

JUNE 2015

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ABBREVIATIONS AND ACRONYMS

AA	Alternatives Analysis
Amtrak	National Railroad Passenger Corporation
Authority	California High-Speed Rail Authority
Authority Board	California High-Speed Rail Authority Board of Directors
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CGS	California Geological Survey
CHSTP	California High Speed Train Project
CNG	Compressed Natural Gas
CNPS	California Native Plant Society
CRHR	California Register of Historical Resources
CWA	Clean Water Act
EC	East Corridor
E1a	East Corridor 1a
E1b	East Corridor 1b
E2a	East Corridor 2a
E2b	East Corridor 2b
E3a	East Corridor 3a
E3b	East Corridor 3b
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMT	Engineering Management Team
FEMA	Federal Emergency Management Agency
FRA	Federal Railroad Administration
GIS	Geographic Information System
HOV	High Occupancy Vehicle
HDC	High Desert Corridor
HSR	High-Speed Rail
LADOT	City of Los Angeles, Department of Transportation
LA River	Los Angeles River
LASHP	Los Angeles State Historic Park
LAUS	Los Angeles Union Station
LOSSAN	Los Angeles to San Diego Passenger Rail Corridor
Metro	Los Angeles County Metropolitan Transportation Authority

MPH	Miles per Hour
NB	Northbound
NEPA	National Environmental Policy Act
NRHP	National Register of Historical Places
PAA	Preliminary Alternatives Analysis
PMT	Program Management Team
RCP	Reinforced concrete pipe
ROW	Right-of-Way
SAA	Supplemental Alternatives Analysis
SB	Southbound
SCG	Southern California Gas Company
SCLT	Santa Clarita Long Tunnel
SCRRA	Southern California Regional Rail Authority (Metrolink)
SR	State Route
SR14	State Route 14
SR14-1	State Route 14 Hybrid-Santa Clarita Long Tunnel-San Fernando West (SR14 Hybrid-SCLT-SFW)
SR14-2	State Route 14 Hybrid-Santa Clarita South-San Fernando West (SR14 Hybrid-SCS-SFW)
SR14-3	State Route 14 East-Santa Clarita Long Tunnel-San Fernando West (SR14 East-SCLT-SFW)
SR14-4	State Route 14 East-Santa Clarita South-San Fernando West (SR14 East-SCS-SFW)
SR14E	State Route 14 East
SR14H	State Route 14 Hybrid
SWG	Stakeholder Working Group
TM	Technical Memorandum
TOD	Transit-Oriented Development
USGS	United States Geological Survey
UPRR	Union Pacific Railroad
VCP	Vitrified Clay Pipe

ES 1 Executive Summary

ES 1.1 Palmdale to Burbank Project Section Background

The Palmdale to Burbank High-Speed Rail (HSR) Project Section is approximately 35 to 45 miles long, and extends through a variety of land uses including rural, urban, densely populated cities, and mountainous terrain. This section starts in the City of Palmdale and travels south and southwest through the San Gabriel Mountains. The current HSR alignments generally follow two corridors across the San Gabriel Mountains. These corridors are identical in the City of Palmdale but diverge south of Lake Palmdale. One corridor would go through the west side of the Community of Acton, through the east side of the City of Santa Clarita, and into the Community of Sylmar area of the San Fernando Valley where it would share a corridor with the existing Metrolink Antelope Valley Line. This is the State Route 14 (SR14) Corridor. The California High-Speed Rail Authority (Authority) and the Federal Railroad Administration (FRA) analyzed SR14 Corridor alignment alternatives and station options in past Alternatives Analysis (AA) documents, including the latest 2014 Supplemental Alternatives Analysis (SAA). This SAA proposes design modifications to the alignment alternatives in the SR14 Corridor in the vicinity of the City of Palmdale and the Community of Acton.

This SAA also introduces additional alignments that generally follow a second proposed corridor, the East Corridor across the San Gabriel Mountains. These alignments would travel through the eastside of the Community of Acton and cross the Angeles National Forest, including the San Gabriel Mountains National Monument, where it would then enter the northeast San Fernando Valley and eventually share a corridor with the existing Metrolink Antelope Valley Line.

Figure ES-1 shows alignments from both corridors connecting the City of Palmdale to the City of Burbank. A comparative evaluation of the full range of the Palmdale to Burbank Section alternatives carried forward will be done in depth in the draft environmental document that will be circulated for public review and comment.

The potential for a more direct connection between the Cities of Palmdale and Burbank was identified in the July 2014 Notice of Preparation (NOP) for the Palmdale to Burbank HSR Section. The subsequent scoping process allowed for stakeholder and public feedback on potential alignment alternatives that would provide a more direct connection between the Palmdale Transportation Center (PTC) Station and HSR station options at the Bob Hope Airport in the City of Burbank, also referred to as the Burbank Airport Station options. Further public input was received during open house meetings in December 2014 which also suggested studying direct alignments.

ES 1.2 Summary of Recommendations in the SAA

This SAA makes recommendations regarding alignment alternatives and station options to be carried forward for further evaluation for the Palmdale to Burbank Project Section. The recommendations of this SAA are as follows:

- The addition of alignment alternatives E1a/b, E2a/b, and E3a/b;
- The adjustment of the station platform option locations at the PTC and Burbank Airport Stations, and the addition of new station platform option configurations at the Burbank Airport Station location;
- Modification of the alignment in the City of Palmdale to parallel the previous alignment approximately 200 feet to the west of the existing railroad right-of-way (ROW);
- Modification of the alignments starting near Lake Palmdale and ending near the Community of Acton. The modification results in an avoidance of Lake Palmdale and a horizontal shift to the south for both alignments through the Community of Acton;

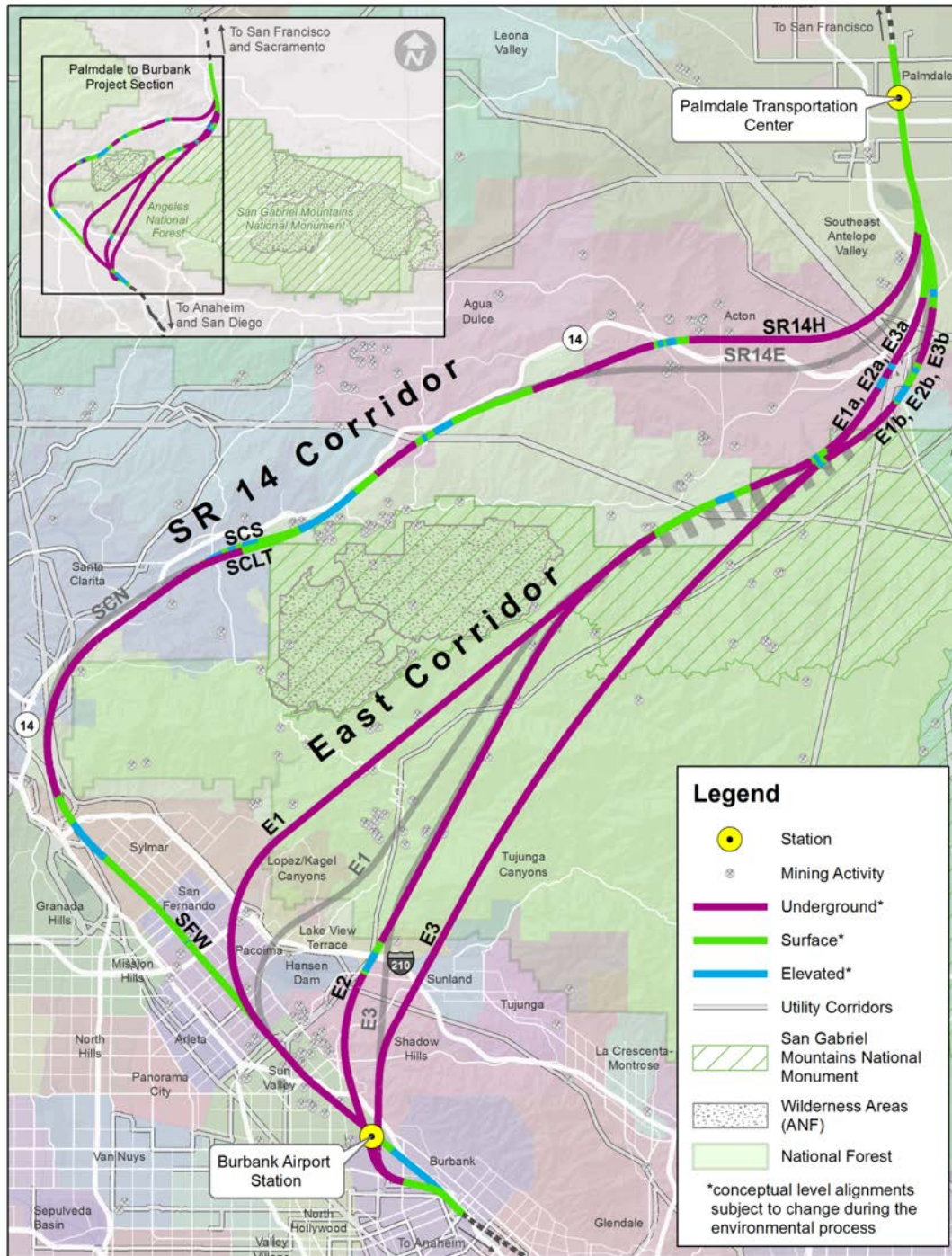


Figure ES-1
Palmdale to Burbank Section Overview

- Withdrawal of the alignment through the San Fernando Valley that is on the east side of the existing railroad ROW; and
- Withdrawal of alignments SR14-3 (SR14 East/SCLT/SFW) and SR14-4 (SR14 East/SCS/SFW).

Note that these recommendations are subject to further evaluation in the environmental review and checkpoint processes.

ES 1.3 Public and Agency Outreach Efforts

The Preliminary Alternatives Analysis (PAA) (2010), SAA (2011), SAA (2012) and SAA (2014) include descriptions of the outreach meetings the Authority conducted to inform the reports. This SAA provides a list of meetings held since the California High-Speed Rail Authority Board of Directors (Authority Board) was briefed on the 2014 SAA on June 3, 2014.

In addition, the Authority released an NOP and the FRA published a Notice of Intent (NOI) for the Palmdale to Burbank and Burbank to Los Angeles Sections on July 24, 2014. The concept of splitting the Palmdale to Los Angeles Section into two sections was introduced in the 2014 SAA and was implemented with the release of the NOPs/NOIs. In relation to these NOPs/NOIs, the Authority hosted seven scoping meetings in August 2014 throughout the project area between the Cities of Palmdale and Los Angeles. These meetings were held in order to allow public agencies and the public to provide comments on what the Palmdale to Burbank and Burbank to Los Angeles environmental documents should study.

The feedback from these public meetings was used to develop the alternatives and design refinements shared with the public at several rounds of outreach efforts that took place after the scoping period in the fall of 2014. These efforts are listed below.

- Seven open house meetings held in December 2014.
- Eight Community Working Group (CWG) meetings held in February and March 2015.
- Nine CWG meetings held in April 2015.
- Nine open house meetings held in May and June 2015.

All of these meetings have contributed to the content of this SAA. Over the years, feedback from the public and agencies has included issues such as noise and vibration impacts, visual impacts, impacts to community cohesion, biological impacts, project cost and funding, ROW, accessibility, consistency with local planning, and more.

ES 1.4 Next Steps

The purpose of this SAA is to describe the range of alternatives considered for the Palmdale to Burbank Section and evaluate and disclose: (1) potential impacts of the alternatives, (2) whether the alternatives meet HSR project objectives and purpose and need, and (3) either recommend the alternatives for further study in the environmental clearance process or their withdrawal from further evaluation.

This SAA informs the project description in the Project-level environmental document. It also sets parameters for the next level of design and environmental analysis.

Authority staff will continue engaging with local government, stakeholders, and the public. Authority and FRA staff will work with the United States Army Corps of Engineers (USACE) and United States Environmental Protection Agency (USEPA) to finalize alternatives to be evaluated in the Project-level environmental document. Authority staff will also present the alternatives identified in this SAA to the Authority Board.

1 SUPPLEMENTAL ALTERNATIVES ANALYSIS REPORT

1.1 Introduction

This SAA updates the Palmdale to Los Angeles HSR Section PAA issued by the Authority in July 2010, and the Palmdale to Los Angeles HSR Section SAAs issued by the Authority in March 2011, April 2012, and May 2014. The 2011 SAA reevaluated the SR14 Corridor from Los Angeles Union Station (LAUS) to the Community of Sylmar, and the 2012 SAA focused solely on the Community of Sylmar to City of Palmdale area of the SR14 Corridor. The 2014 SAA reevaluated all alignment alternatives and station options of the SR14 Corridor of the Palmdale to Los Angeles Section based on the current definition of the HSR objectives, and project purpose and need.

The primary conclusions of the 2014 SAA were that the Palmdale to Los Angeles Project Section should be divided into two sections (Palmdale to Burbank and Burbank to Los Angeles), that Burbank Airport Station may be the HSR station alternative in the San Fernando Valley, and that the PTC may be the Palmdale HSR station alternative. This SAA builds on the recommendations of the 2014 SAA, is consistent with the 2014 NOP/NOI, and is informed by the subsequent scoping process.

In addition, and as mentioned in the 2014 SAA, recommended alignment alternatives from the 2014 SAA are now combined to form end-to-end alternatives from the City of Palmdale to the City of Burbank. Previous Palmdale to Los Angeles AA reports have analyzed alignment alternatives and station options by subsections based on geographic context. For example, the SR14 Corridor from the City of Palmdale to the City of Burbank consisted of three subsections. In this SAA, recommended alignment alternatives of the past subsections of the SR14 Corridor are combined to result in station-to-station alternatives. These station-to-station alignment alternatives are evaluated in this SAA and are either recommended for additional analysis in the environmental clearance process or withdrawn from further evaluation.

While this SAA considers alternatives within a small section of the entire HSR network, these alternatives are evaluated in the context of the HSR System as a whole in order to meet the HSR project goals. For example, alternatives in individual sections that may increase travel time, disproportionately increase implementation cost, and/or require operational exceptions as compared to other alternatives could cumulatively influence how the HSR System can meet its program-wide goals.

The purpose of this SAA is to:

Provide environmental and engineering information on a range of alternatives considered for the Palmdale to Burbank Section, and:

1. report how they either meet or do not meet the HSR objectives and project purpose and need;
2. evaluate and disclose potential impacts; and
3. recommend alternatives for additional analysis in the environmental clearance process or their withdrawal from further evaluation.

1.2 Criteria Applied in the Alternatives Analysis Process

In 2011, the Authority and FRA developed guidance to define an alternatives analysis process. Per this guidance, the criteria that qualify an alternative to be carried forward for further consideration include (among other criteria, which are included in Table 1.7-2, and evaluated in Section 2 below):

- Alternative meets purpose and need and basic project objectives in providing a sustainable reduction in travel time between major urban centers.
- Alternative has no preliminary environmental or engineering issues that would make approvals infeasible.

- Alternative is potentially feasible or practical to construct and operate.
- Alternative may reduce or avoid adverse environmental impacts that another alternative would cause.

1.3 Background and Description of Alternatives; Conclusions of this SAA

The Palmdale to Burbank Section of the HSR project is approximately 35 to 45 miles long, depending on the different alternatives under consideration. This SAA begins with the alternatives and station options that generally follow the SR14 Corridor recommended for further study in the 2014 SAA. This SAA also introduces alternatives and station options that generally follow the East Corridor. These alternatives extend from near Avenue O in the City of Palmdale to the Burbank Airport Station, connecting with the Bakersfield to Palmdale Section to the north and the Burbank to Los Angeles Section to the south. In addition to the introduction of East Corridor alignments, this SAA includes alignment modifications in the City of Palmdale, station configuration modifications at the PTC and Burbank Airport Stations, alignment modifications south of Lake Palmdale within the SR14 Corridor, and introduces two additional station configurations at the Burbank Airport Station.

The Palmdale to Burbank Section is an essential part of the statewide HSR system, filling a gap in the current north-south passenger rail network in California. It would provide a new transportation mode that would contribute to increased mobility and improved access to markets throughout California.

In July 2010, the PAA was presented to the Authority Board for recommendations of alignment alternatives and station options for the City of Palmdale to City of Los Angeles area. In March 2011, the Authority Board was presented with the 2011 SAA recommendations for supplemental alignment alternatives and station options for the Community of Sylmar to City of Los Angeles area. In April 2012, the Authority Board was presented with the 2012 SAA recommendations for supplemental alternative alignments for the City of Palmdale to Community of Sylmar area. The 2014 SAA incorporated the recommendations from the previous SAAs and in June 2014, the Authority Board was presented the following recommendations of the 2014 SAA:

- Dividing the Palmdale to Los Angeles Section into two separate HSR sections: Palmdale to Burbank and Burbank to Los Angeles.
- Withdrawing SR14 West alignment alternative (near the City of Palmdale) because its associated station (Palmdale West) would not provide intermodal connections to existing inter-regional rail service and serve the planned transit supportive land uses at PTC, and lacks connection to the proposed High Desert Corridor (HDC)/XpressWest interstate HSR service.
- Lowering the profile of the Santa Clarita North (SCN) Alignment Alternative and extending the Santa Susana tunnel to meet alignment design criteria.
- Reintroducing an HSR alignment to the west of Metrolink in the San Fernando Valley into the project
- Withdrawing both the Branford Street and San Fernando Station Options in the San Fernando Valley due to a lack of supportive land uses (such as commercial corridors, mixed-use development, mass transit, etc.) around these locations consistent with the needs of a temporary terminus station (from the 2012 Business Plan) and a lack of regional interconnectivity. This interconnectivity is provided at the Burbank Airport Station Option due to proximity with Bob Hope Airport, the Regional Intermodal

Transportation Center (RITC)¹ and associated facilities, and the Metrolink Antelope Valley Line and Ventura County line.

- Slightly shifting the LAPT1 alignment east to accommodate an at-grade or elevated connection to LAUS.

This SAA documents the following additional alternatives and alignment and station modifications (along with supporting evaluation) recommended for incorporation into or withdrawal from the Palmdale to Burbank HSR Section's environmental process:

- Carrying forward alignment alternatives E1a/b, E2a/b, and E3a/b and their associated Burbank Airport Station configurations.
- Shifting the Burbank Airport Station (that matches with two of the alignment options) northwest along the existing railroad ROW to be located west of North Hollywood Way.
- Modifying the alignment and station configuration within the City of Palmdale by a shift of approximately 200 feet to the west of the existing railroad ROW and a ¼-mile shift to the south near Avenue Q.
- Modifying the alignments starting near Lake Palmdale and ending near the Community of Acton. The modification results in an avoidance of Lake Palmdale and a horizontal shift to the south for both alignments through the Community of Acton.
- Withdrawing the alignment through the San Fernando Valley that is on the east-side of the existing railroad ROW.
- Withdrawing the alignments SR14-3 and SR14-4.

Note that these recommendations are subject to further evaluation in the environmental review and checkpoint process.

1.4 Alternatives Development Process

The approach to the preparation of this SAA involves the creation and refinement of alternatives through a series of iterative processes that are intended to compare alternatives. This SAA follows a defined AA process the Authority and FRA developed in 2011 (Technical Memorandum, Alternatives Analysis Methods for Project EIR/EIS, Version 3), and uses both qualitative and quantitative measures that reflect a mixture of applicable policy, environmental, and technical considerations.

The 2011 guidance directs that the AA process shall, "identify reasonable and feasible project alternatives that would meet the Purpose and Need for the project and are consistent with the Basis of Design Report, identify those alternatives where environmental issues (severe conflicts or constraints) or engineering challenges may justify dropping them from further analysis, and provide comparative information and data that highlight and compare similarities and differences between alternatives by using project design criteria."

Generally, environmental review laws require evaluation of reasonable alternatives. Through the AA process, the Authority and FRA seek to identify reasonable alternatives by defining a range of station and alignment configurations which would feasibly attain the purpose and need of the project, identify preliminary areas of potential environmental impact, and allow for a comparative evaluation of the

¹ The RITC at Bob Hope Airport will facilitate connections with the airport by providing parking and rental car facilities in coordination with the airport. It held a grand-opening ceremony on June 27, 2014.

alternatives that meet the project's objectives and purpose and need. Every conceivable alternative to a project need not be evaluated. Rather, when multiple potentially feasible options exist, a reasonable range of alternatives is considered. Alternatives that are not potentially feasible or that do not meet basic purpose and need are not required to be considered.

The analysis in this SAA utilizes a centerline approach, meaning that the analysis contained in the evaluation table in Appendix A is based off a common centerline between the southbound and northbound HSR tracks. This is an appropriate approach for the SAA analysis which screens a relatively large number of alternatives. A more detailed analysis based off of the engineered project footprint will take place in future environmental documents.

Reasonable alternatives are those that are practical and potentially feasible from the technical and economic standpoint; these are identified through the AA process. Those reasonable alternatives are then carried forward for further analysis in the draft environmental review document.

The techniques that are used to gather information and develop and compare alternatives include:

- **Field Inspections of Corridors** – The potential alignment, ROW, and station locations are the subject of field inspection by qualified planners, engineers, and environmental scientists with experience in tunneling, railroad operations, and construction of linear transportation projects to identify conditions and factors not visible in aerial photos or on maps. Over the course of the study, field inspections become progressively more detailed as the alternatives are refined by the planning, environmental, and engineering work.
- **Qualitative Assessment** – A number of the qualitative measures used to describe the alternative alignments are developed by professionals with experience in the construction and operation of HSR and other transportation systems. These measures include constructability, accessibility, operability, maintainability, ROW, public infrastructure impacts, railway infrastructure impacts, and environmental impacts.
- **Engineering Assessment** – Engineering assessments are provided for a number of measures that can be readily quantified at this stage of project development. The engineering assessments can provide information on project length, travel time, and configuration of key features of the alignment such as the presence of existing infrastructure and geology.
- **GIS Analysis** – The bulk of the assessment is performed using geographic information system (GIS) data, which enables depictions of the project's interactions with a variety of measurable geographic features, both natural and built. GIS data are used to assess impacts on farmland, water resources, floodplains, wetlands, threatened and endangered species, cultural resources, current urban development, infrastructure, oil and gas exploration, and production and other resources.
- **Community/Stakeholder Outreach** – The project team conducts outreach meetings with stakeholders and the general public to discuss and receive feedback on the project alternatives. Input from the outreach process provides insight regarding local issues and concerns, and can be used to supplement the information provided by the other information-gathering techniques cited above.

The Authority has developed assessment and analysis measures for each of the techniques outlined above. The evaluation measures, as applied, are progressively more technical and quantitative as alternatives evolve.

1.5 Meeting Project Purpose and Need/Objectives

The Authority's purpose is to plan, build, and operate an HSR System coordinated with California's existing transportation network, particularly intercity rail and bus lines, commuter rail lines, urban rail lines, highways, and airports.

This SAA compares the station and alignment alternatives to the Authority's adopted purpose and need in support of the project goals as described below:

The purpose of the statewide [High-Speed Train] HST system is to provide a reliable high-speed electric-powered train system that links the major metropolitan areas of the state, and that delivers predictable and consistent travel times. A further objective is to provide an interface with commercial airports, mass transit, and the highway network, and to relieve capacity constraints of the existing transportation system as increases in intercity travel demand in California occur, in a manner sensitive to and protective of California's unique natural resources (Authority and FRA 2005).

For Clean Water Act Section 404(b)(1) compliance, the USACE must take into consideration the applicant's needs in the context of the geographic area of the proposed action and the type of project being proposed. The USACE has determined that the overall project purpose (as stated above) allows for a reasonable range of practicable alternatives to be analyzed and is acceptable as the basis for the USACE 404(b)(1) AA.

The Authority has adopted the following goals and objectives for the proposed HSR System:

1. Provide intercity travel capacity to supplement critically overused interstate highways and commercial airports.
2. Meet future intercity travel demand that will be unmet by present transportation systems and increase capacity for intercity mobility.
3. Maximize intermodal transportation opportunities by locating stations in areas with good access to local mass transit or other modes of transportation.
4. Improve the intercity travel experience for Californians by providing comfortable, safe, frequent, and reliable high-speed travel.
5. Provide a sustainable reduction in travel time between major urban centers.
6. Increase the efficiency of the intercity transportation system.
7. In order to reduce impacts on communities and the environment, the alignment shall follow existing transportation or utility corridors to the extent feasible.
8. Develop a practical and economically viable transportation system that can be implemented in phases and generate revenues in excess of operations and maintenance costs.
9. Provide intercity travel in a manner that minimizes urban sprawl, is sensitive to and protective of the region's natural resources, and reduces emissions and vehicle miles traveled for intercity trips.
10. Preserve wildlife corridors and mitigate impacts to wildlife movement, where feasible, in order to limit the extent to which the system may present an additional barrier to wildlife's natural movement.

The need for an HSR System exists Statewide, with regional areas contributing to this need. The Palmdale to Burbank HSR Project Section is an essential component of the Statewide HSR System. The capacity of California's intercity transportation system, including the greater Los Angeles area, is insufficient to meet existing and future travel demands. The current and projected system congestion will continue to result in poor air quality, reduced reliability, and increased travel times. The current transportation system has not kept pace with the tremendous increase in population, economic activity, and tourism in the State, including that in Southern California. The interstate highway system, commercial airports, and the conventional passenger rail system serving the intercity travel market are operating at or near capacity and will require large public investments for maintenance and expansion to meet existing demand and future growth over the next 25 years and beyond. Moreover, the feasibility of expanding many major highways and key airports is uncertain; some necessary expansions may be impractical, or

are constrained by physical, political, environmental, and other factors. The need for improvements to intercity travel in California, including intercity travel between the Antelope Valley and the Los Angeles area, relates to the following issues:

- Future growth in demand for intercity travel, including the growth in demand in Southern California.
- Capacity constraints that will result in increasing congestion and travel delays, including those in Southern California.
- Unreliability of travel stemming from congestion and delays, weather conditions, accidents, and other factors that affect the quality of life and economic well-being of residents, businesses, and tourism in California, including Southern California.
- Reduced mobility as a result of increasing demand on limited modal connections between major airports, transit systems, and passenger rail in the State, including Southern California.
- Poor and deteriorating air quality and pressure on natural resources and agricultural lands as a result of expanded highways and airports, and urban development pressures, including those in Southern California.

1.6 2014 Business Plan

The 2014 Business Plan builds on and updates the Revised 2012 Business Plan. The Authority issued a Draft 2014 Business Plan on February 7, 2014, and sought and received public comment through a variety of means including mail, a dedicated email address, phone, the Authority's Draft 2014 Business Plan website, and at the Authority's February, March, and April Board meetings. The Authority also participated in three legislative hearings and engaged with a range of stakeholders to review the Draft Plan and to receive comments and respond to questions. The Authority Board considered all the comments received on the Draft 2014 Business Plan and published the 2014 Business Plan on April 30, 2014.

The 2014 Business Plan reports on the progress made with federal, state, regional and local partners since 2012 and highlights some of the milestones that lie ahead. It presents updated cost estimates and ridership and revenue forecasts, all of which have been informed by and improved through rigorous scrutiny and review by a range of external experts and academics. These new forecasts serve as the basis for the updated financial analysis – which continues to show that the program is financially viable and which, in turn, confirms that the private sector will regard this as an attractive investment opportunity. Following the recommendations offered by the Legislative Peer Review Group (PRG) and the United States Government Accountability Office (GAO), the Authority also applied an analytic technique designed to quantify and better understand the risks associated with its forecasts, which is described in relevant sections of the document. The 2014 Business Plan also includes an updated analysis of the economic impacts of the HSR System that reflects GAO recommendations. Lastly, the 2014 Business Plan updated the summary of potential risks and the process the Authority uses to monitor, mitigate and manage those risks.

1.7 Evaluation Measures and Comparison of Alternatives

The Authority evaluates project alternatives using system performance criteria that address design differences and qualities, and correspond to the project purpose and need and objectives indicated above. Measures to evaluate and compare the project alternatives are described below in Table 1.7-2. Where it is possible to quantify the effects, estimates are provided; where it is not possible to quantify effects, qualitative evaluation is provided. These evaluation measures are summarized in Table 3.1-1 at the end of this document, and are assigned as a primary or secondary reason if an alternative is being withdrawn from further consideration.

Alignment and station performance objectives and criteria are:

Table 1.7-1 Performance Objectives and Criteria

Objective	Criteria
Maximize ridership/revenue potential	Travel time/Route length
Maximize connectivity and accessibility	Intermodal connections
Minimize operating and capital costs	Operations and maintenance issues and costs
Source: Authority and FRA 2011 Alternatives Analysis Guidance.	

In addition to the Authority objectives and criteria above, further measures to evaluate and compare the project alternatives are described below. Where it is possible to quantify the effects, estimates are provided, and where it is not possible to quantify effects, qualitative evaluation is provided.

Table 1.7-2 HSR AA Evaluation Measures

Measurement	Method	Source
A. Land use supports transit use and is consistent with existing, adopted local, regional, state, and federal plans, and is supported by existing or future growth areas as measured by:		
Development potential for Transit-Oriented Development (TOD) within walking distance of station	Identify existing and proposed land uses within 1/2 mile of station locations. Identify if there are TOD districts, TOD overlay zones, mixed-use designations, or if local jurisdictions have identified station areas for redevelopment or economic development	Regional and local planning documents and land use analysis and input from local planning agencies
Consistency with other planning efforts and adopted plans	Qualitative – general analysis of applicable planning and policy documents	Land Use Analysis and input from planning agencies
B. Construction of the alternative is feasible in terms of engineering challenges and ROW constraints as measured by:		
Constructability, access for construction; within existing transportation ROW	Extent of feasible access to alignment for construction	Conceptual design plans and maps
Disruption to existing railroads	ROW constraints and impacts on existing railroads	Conceptual design plans and maps
Disruption to and relocation of utilities	Number of utilities crossed	Conceptual design plans and maps
Identification of geological features including capable faults and groundwater	Constructability, design measures, access to portals,	Desk top studies; field investigation; geotechnical borings
C. Minimizes disruption to neighborhoods and communities – extent to which an alternative minimizes ROW acquisitions, minimizes dividing an established community, and minimizes conflicts with community resources.		
Displacements	If possible, estimate number of properties by land use type that would be displaced, or acres of land within the ROW/station footprint, by type of land use: single-family, multifamily, retail/commercial, industrial, etc.	Identified by comparing the alignment conceptual design drawings with aerial photographs, zoning maps, GIS layers, and regional and local General Plan maps

Table 1.7-2 HSR AA Evaluation Measures

Measurement	Method	Source
Property with Access Affected	Estimate number of potential locations along the alignments or at station locations where, and the extent to which, access would be affected	Conceptual design plans and aerial photographs
Proximity to Schools	Consistent with, and exceeding Public Resources Code Section 21151.4, identify the location of schools within 1,500 feet on either side of the construction footprint	Conceptual design plans, aerial photographs, GIS layers, and regional and local General Plan maps
Proximity to Land Fills	Consistent with Title 27 of the California Code of Regulations, identify the location of landfills within 0.25 mile on either side of the construction footprint	Conceptual design plans and aerial photographs
Proximity to Section 4(f) Resources	Identify protected parks, wildlife refuges, or historical sites to determine if a permanent, temporary, or constructive use would likely occur	Conceptual design plans, historic/archival and current aerial imagery, GIS layers, regional and local General Plan maps, and federal, state, and local cultural resources registries
Local Traffic Effects around Stations	Identify potential locations where increases in traffic congestion or level of service (LOS) are expected to occur	Existing traffic LOS from local jurisdictions
Local Traffic Effects at grade separations	Identify potential locations for at-grade separations where increase in traffic congestion or LOS are expected to occur	Existing traffic LOS from local jurisdictions
D. Minimizes impacts to environmental resources – extent to which an alternative minimizes impacts on natural resources are measured by:		
Waterways and wetlands and natural preserves or biologically sensitive habitat areas affected	Identify new rail and roadway bridge crossings, tunnels, portals required; rough estimate of acres of wetlands, width of waterways crossed; acres and species of threatened and endangered habitat affected; acres of natural areas/critical habitat affected	Conceptual design plans and GIS layers; National Wetlands Inventory and National Hydrography Dataset
Cultural Resources	Identify locations of National Register of Historic Places or California Historical Resources Information System listed properties. For archaeological resources, identify areas of high or moderate sensitivity based on previous studies conducted in the study area	Conceptual design plans and GIS layers; historic/archival and current aerial imagery, regional and local General Plan maps, and federal, state, and local cultural resources registries and cultural resource records search and surveys
Parklands	Estimate number and acres of parks that could be directly and indirectly affected. This would also include major trails that would be crossed	Conceptual design plans, local General Plans, aerial photographs, and GIS layers

Table 1.7-2 HSR AA Evaluation Measures

Measurement	Method	Source
Agricultural Lands	Estimate acres of prime farmland, farmland of statewide importance, unique farmland, and farmland of local importance within preliminary limits of disturbance	Conceptual design plans and GIS layers
E. Enhances environmental quality — extent to which an alternative minimizes impacts on the natural environment as measured by:		
Noise and Vibration effects on sensitive receivers	Identify types of land use activities that would be affected by HSR pass-by noise and ground vibration	Results of screening-level assessment: inventory of potential receivers from site survey and aerial maps
Change in visual/scenic resources	Identify number of local and scenic corridors crossed and scenic/visual resources that would be affected by HSR elevated structures in scenic areas and shadows on sensitive resources (parks). Identify locations where residential development is in close proximity to elevated HSR structures	Results of general assessment; survey of alignment corridors and planning documents from local and regional agencies
Maximize avoidance of areas with geological and soils constraints	Identify number of crossings of known seismic faults, estimate acres of encroachment into areas with highly erodible soils, acres of encroachment into areas with high landslide susceptibility; evaluate groundwater impacts.	United States Geological Survey maps and available GIS data; California Department of Conservation's California Geologic Survey, Regional Geologic Hazards & Mapping Program; check Map Index to identify maps appropriate for HSR sections
Maximize avoidance of areas with potential hazardous materials	Identify hazardous materials/waste areas to avoid constraints	Data from previous records search conducted for other projects within the study area
<p>Note: Since the 2011 guidance, new criteria have been added for this analysis. (Proximity to schools, landfills, and Section 4(f) resources) Source: Technical Memorandum, Alternatives Analysis Methods for Project EIR/EIS, Version 3, 2011.</p>		

1.8 Community Outreach

Since June 2014, the Authority and its representatives have met with stakeholders within the Palmdale to Burbank Section to gather their input, hear their concerns, and identify potential alignment refinements. In addition to the ongoing stakeholder meetings (see Table 1.8-1), the Authority has held three rounds of public meetings, including seven scoping meetings in August 2014 as part of the public scoping process as well as seven community open houses in December 2014 and nine in May and June 2015, to inform the public about the refined corridor alternatives. CWGs were also formed and two rounds of meetings were held, including eight CWG meetings in February and March 2015, and nine CWG meetings in April 2015. Additional details are offered in the sections below.

Throughout this period of discussion with stakeholders, the Palmdale to Burbank team gathered feedback regarding the technical aspects of the proposed alignments and station options along with general questions as to the statewide and section specific process. Comments received at these meetings included connectivity, noise/vibration, eminent domain, grade crossings, future development plans, impacts to the Angeles National Forest, and visual impacts, each of which will be considered in greater detail during the environmental review and/or design refinement processes.

1.8.1 Summary of Public Scoping Meetings

Public scoping activities for the Palmdale to Burbank and Burbank to Los Angeles Project Sections' EIR/EIS² were conducted between July 25, 2014, and September 12, 2014 (public scoping period). During this time period, the Authority held seven public scoping meetings between August 5, 2014, and August 19, 2014. The public scoping meetings were attended by 916 participants who submitted a total of 140 comment forms – 107 for the Palmdale to Burbank Project Section and 33 for the Burbank to Los Angeles Project Section. In addition, one federal agency scoping meeting was tailored for resource agencies.

The public scoping comments and questions collected at the agency and scoping meetings, submitted via mail and through the Authority's website comment form, are included in the Palmdale to Burbank Scoping Report, which is available for public review on the Authority's website at the following location under the "2014 Scoping Report" dropdown heading: http://www.hsr.ca.gov/Programs/Statewide_Rail_Modernization/Project_Sections/palmdale_burbank.html. Comments received during the Palmdale to Burbank Section public scoping process identified and commented on potential environmental impacts, mitigation measures, and alternatives. The information on impacts, mitigation measures, and proposed alternatives developed through the scoping process will inform the analysis that the Authority and FRA will present in the draft environmental document. Additional public scoping details for the Palmdale to Burbank Project Section are also provided in the Scoping Report.

1.8.2 Summary of Community Open House Meetings

The Authority provided additional public involvement opportunities in the form of two rounds of open house meetings for the Palmdale to Burbank Project Section after the scoping meetings, including seven community open houses in December 2014 and nine in May and June 2015. The meetings were used to present new information on the Palmdale to Burbank Project Section alignment alternatives as well as provide an opportunity for additional public input. The Authority conducted seven meetings between December 2 and 13, 2014 in an open house format, allowing the public to receive updates through information stations and to have their questions answered by Palmdale to Burbank technical staff. Approximately 963 people attended the meetings, and 308 comment cards were collected at the meetings. An additional 133 comments were submitted via mail, email, or through the Authority's website comment form, from December 2, 2014, to January 5, 2015.

Using the feedback received during the December 2014 open house meetings, the Authority refined the East Corridor alignments. The Authority then held another nine meetings in May and June 2015 to inform the public about the latest refinements to the corridor alternatives. Two of these meetings were also offered as a live webcast, with one of the meetings in English and the other in English and Spanish. The meetings were conducted in an open house format featuring a brief presentation that highlighted the latest on the Palmdale to Burbank Project Section. Final numbers for attendance and comments received will be updated when available.

1.8.3 Summary of Community Working Group Meetings

Following the December 2014 open house meetings, the Authority developed nine CWGs throughout the Palmdale to Burbank Project Section to engage communities on an ongoing basis to discuss issues that are of concern to their community. The CWGs are informal, voluntary groups of community members representing a broad range of local interests, and are organized to deepen community input into the HSR planning process. The groups are comprised of community representatives from various constituencies in proximity to the Palmdale to Burbank Project Section and local interest groups involved in transportation, environmental sustainability, and social issues in the region. Each group is designed to be small enough

² This SAA is subject to the same caveat as contained in footnote 1 of the Authority's 2014 NOP for the Palmdale to Burbank EIR that preceded these 2014 scoping meetings.

for constructive collaboration (approximately 30 members) to support the route planning process. Feedback from the members of each of the CWGs is considered by the Authority as it continues to develop the range of alternatives under study to connect the Antelope Valley to the San Fernando Valley.

The Authority developed and held two rounds of CWG meetings, including eight CWG meetings in February and March 2015, and nine CWG meetings in April 2015. As part of the first round of meetings, a CWG meeting was held in Sun Valley for the Communities of Sun Valley and Pacoima. At the request of the communities, an additional CWG was formed for Pacoima and conducted entirely in Spanish with English interpretation services offered for non-Spanish speaking participants. Each round of meetings brought together approximately 250 community representatives. Below is the listing of the nine CWGs:

- Palmdale
- Acton/Agua Dulce
- Santa Clarita Valley
- Sylmar
- San Fernando
- Foothill Communities
- Pacoima (Spanish and English)
- Sun Valley
- Burbank

1.8.4 Summary of Outreach Briefings

The Authority has continued to engage the communities along the Palmdale to Burbank Project Section. Table 1.8-1 provides a summary of the key stakeholder meetings conducted between June 2014 and May 2015. Key stakeholders included: agencies, companies, organizations, corridor cities, and elected officials.

Table 1.8-1 Summary of Palmdale to Burbank Section Key Stakeholder Outreach Meetings (June 2014 – March 2015)

No.	Date	Meeting	Category*	Jurisdiction
Briefings Prior to Public Scoping Period				
1.	June 16, 2014	Los Angeles City Councilmember Felipe Fuentes	EL	Los Angeles
2.	July 17, 2014	Foothill Trails District Neighborhood Council	STO	Los Angeles
3.	July 21, 2014	City of Burbank Transportation Committee	STO	Burbank
4.	July 23, 2014	Walt Disney Studios	STO	Burbank
Briefings During Public Scoping Period				
5.	July 30, 2014	Acton/Agua Dulce Town Council	STO	Los Angeles County
6.	August 5, 2014	Los Angeles Department of Transportation (LADOT) and Planning Department	AS	Los Angeles
7.	August 12, 2014	Los Angeles River/Natural Resources Defense Council (NRDC) Working Group	STO	Los Angeles
8.	August 13, 2014	Sunland-Tujunga Neighborhood Council	STO	Los Angeles
9.	August 20, 2014	Pacoima Neighborhood Council	STO	Los Angeles
10.	August 26, 2014	City of San Fernando	AS	San Fernando
11.	August 26, 2014	Shadow Hills Property Owners Association (SHPOA)	STO	Los Angeles
12.	August 27, 2014	Little Tokyo Leadership	GIO	Los Angeles
13.	August 28, 2014	Sylmar Neighborhood Council	STO	Los Angeles
14.	September 2, 2014	State Senator Fran Pavley's Office	AS	Santa Clarita
15.	September 2, 2014	Los Angeles City Councilmember Mitch O'Farrell's Office	AS	Los Angeles

Table 1.8-1 Summary of Palmdale to Burbank Section Key Stakeholder Outreach Meetings (June 2014 – March 2015)

No.	Date	Meeting	Category*	Jurisdiction
16.	September 3, 2014	Gateway Cities Council of Governments, Board of Directors	EL/AS	Los Angeles County
17.	September 4, 2014	Los Angeles City Councilmember Gilbert Cedillo's Office	AS	Los Angeles
18.	September 8, 2014	U.S. Congressman Xavier Becerra's Office	AS	Los Angeles
19.	September 9, 2014	Joint City of Burbank Council and Transportation Commission meeting	STO	Burbank
20.	September 9, 2014	Burbank Area Legislative Briefing	AS	Burbank
21.	September 12, 2014	Northern Valley Legislative Briefing	AS	Los Angeles County
Briefings After Public Scoping Period				
22.	September 16, 2014	CHSRA Board Meeting: Palmdale to Burbank Project Section Update and overview of Public Scoping Process	PIM	Los Angeles County
23.	September 18, 2014	North Hollywood North East Neighborhood Council	STO	Los Angeles
24.	September 25, 2014	Tribal Information Meeting	STO	Los Angeles County
25.	October 6, 2014	Los Angeles River Cooperation Committee	STO	Los Angeles
26.	October 16, 2014	Burbank Chamber of Commerce	GIO	Burbank
27.	October 30, 2014	Congressman McKeon's Office	AS	Los Angeles County
28.	November 4, 2014	Burbank & Glendale Transportation Management Organizations (TMO)	STO	Burbank
29.	November 12, 2014	City of San Fernando	AS	San Fernando
30.	November 13, 2014	Valley Alliance of Neighborhood Councils (VANC)	STO	Los Angeles
31.	November 14, 2014	City of Santa Clarita	AS	Santa Clarita
32.	November 19, 2014	Legislative Briefing - Burbank	AS	Los Angeles County
33.	November 20, 2014	Legislative Briefing - Santa Clarita	AS	Los Angeles County
34.	November 25, 2014	Meeting with Los Angeles City Council Member Felipe Fuentes and the City Departments	EL/AS	Los Angeles
Briefings During/After Open House Meetings				
35.	December 5, 2014	Walt Disney Studios	STO	Burbank
36.	December 10, 2014	Acton-Agua Dulce Unified School District (AADUSD) - Meeting with Dr. Brent Woodard, Superintendent	STO	Los Angeles County
37.	December 12, 2014	Antelope Valley African American Chamber of Commerce	GIO	Los Angeles County
38.	December 22, 2014	Office of Los Angeles County Supervisor Michael Antonovich	AS	Los Angeles County
39.	January 8, 2015	Shadow Hills Property Owners Association (SHPOA) - David DePinto	STO	Los Angeles
40.	January 13, 2015	Foothill Communities Community Meeting	PIM	Los Angeles
41.	January 20, 2015	Valley Industry and Commerce Association (VICA)	GIO	Los Angeles County
42.	January 20, 2015	City of San Fernando	AS	San Fernando
43.	January 21, 2015	Los Angeles Business Council Institute - Legislative Committee	GIO	Los Angeles County
44.	January 26, 2015	Northern Corridor Cities Meetings (NCC)	STO	Los Angeles

Table 1.8-1 Summary of Palmdale to Burbank Section Key Stakeholder Outreach Meetings (June 2014 – March 2015)

No.	Date	Meeting	Category*	Jurisdiction
45.	February 7, 2015	Los Angeles Neighborhood Council Coalition (LANCC)	STO	Los Angeles
46.	February 18, 2015	Pacoima Neighborhood Council	STO	Los Angeles
47.	February 19, 2015	Crescenta Valley Town Council	STO	Los Angeles
48.	February 19, 2015	Foothill Trails Neighborhood Council	STO	Los Angeles
49.	February 23, 2015	Tour of Shadow Hills Community Area – Chairperson Dan Richard visited and toured Kagel Canyon, Tujunga Wash, and Shadow Hills with members of the community	STO	Los Angeles
50.	February 26, 2015	San Fernando Valley Town Hall – Imagining Our Transportation Future	STO	Los Angeles County
51.	February 28, 2015	Communities Against Displacement Community Meeting (Pacoima, San Fernando, and Sylmar)	STO	Los Angeles and San Fernando
52.	March 11, 2015	Tour of the City of San Fernando – Chairperson Dan Richard visited and toured San Fernando with City Council members and business community members	EL / AS	San Fernando
53.	March 11, 2015	California State University Northridge (CSUN) –Transportation/Urban Planning Students	GIO	Los Angeles
54.	March 19, 2015	San Fernando Valley Council of Governments (SFVCOG) Board of Directors	EL	Los Angeles County
55.	March 26, 2015	Pacoima Beautiful (All-Spanish Presentation)	STO	Los Angeles
56.	April 8, 2015	Independent Cities Association - Board of Directors Member, Robert Gonzales	EL	Los Angeles
57.	April 8, 2015	San Fernando Road Business Alliance	STO	Los Angeles and San Fernando
58.	April 9, 2015	San Fernando Valley COG	AS	Los Angeles County
59.	April 15, 2015	Presentation: Valley Industry and Commerce Association (VICA) Gov't Affairs Cmte.	AS / STO	Los Angeles County
60.	April 30, 2015	San Fernando Valley Council of Governments Transportation Committee	STO	Los Angeles County
61.	April 30, 2015	Small Group meeting with Foothill Communities representatives	STO	Los Angeles
62.	May 1, 2015	Office of Assembly Member Patty Lopez	AS	Los Angeles County
63.	May 1, 2015	Office of Los Angeles County Supervisor Sheila Kuehl	AS	Los Angeles County
64.	May 4, 2015	Office of Councilmember Felipe Fuentes	AS	Los Angeles County
65.	May 12, 2015	Santa Clarita Stakeholders	STO	Santa Clarita
66.	May 12, 2015	VICA Transportation Committee	AS	Los Angeles County
67.	May 18, 2015	Office of Los Angeles County Supervisor Michael Antonovich	AS	Los Angeles County
68.	May 22, 2015	Tour of the City of San Fernando: CHSRA Board Member Katherine Perez-Estolano, Joel Fajardo, Mayor, City of San Fernando, and Dave DePinto of SAFE	STO	Los Angeles and San Fernando
69.	May 22, 2015	Office of Congressman Adam Schiff	AS	Los Angeles County

Table 1.8-1 Summary of Palmdale to Burbank Section Key Stakeholder Outreach Meetings (June 2014 – March 2015)

No.	Date	Meeting	Category*	Jurisdiction
70.	May 22, 2015	Office of Congressman Steve Knight	AS	Los Angeles County
Notes: * Category Key: AS = Agency Staff; EL = Elected; GIO = General Interest Organization; M = Media; P = Public; PIM = Public Information Meeting; PWG = Policy Working Group; SM = Scoping Meeting; STO = Stakeholder Organization; TAG/TWG = Technical Assessment/Working Group Source: HMM/URS/Arup Joint Venture, 2015.				

1.8.5 Corridor Cities

1.8.5.1 City of Palmdale

The Authority has remained in active communication with the City of Palmdale through routine meetings. Meetings between city staff and the Authority's Palmdale to Los Angeles team took place on July 14, 2014, October 15, 2014, April 8, 2015, and May 26, 2015 to continue discussions regarding the alignment alternatives, station options, and technical components of the HSR vision. In addition, Authority staff began participating in weekly Station Area Planning coordination meetings starting April 7, 2015. Additionally, the Authority and City staff participated in a joint Eco District Training workshop in Portland Oregon the week of May 18. The City of Palmdale staff also attended the legislative/city staff briefing on February 19, 2015 and the CWGs held in the City of Palmdale on March 2, 2015 and April 27, 2015.

Through these dialogues, the City of Palmdale City Council and staff continue to support an alignment via the Antelope Valley that includes a station option in the City of Palmdale. The City of Palmdale has documented its support for the HSR project in writing. Specifically, the city staff and City Council prefer the SR14 East and SR14 Hybrid alignment alternatives because each proposes a station at the existing PTC location, which is consistent with the city's current vision to promote connectivity and targeted land uses consistent with the HSR station. The Authority continues to meet with Los Angeles County Metropolitan Transportation Authority (Metro), the HDC, and XpressWest to coordinate on relevant issues in the City of Palmdale area.

1.8.5.2 Communities of Acton and Agua Dulce

The Authority organized a workshop with Community of Acton and Community of Agua Dulce stakeholders on July 30, 2014 to discuss potential impacts to their community that may result from the proposed SR14 Corridor. Since then, the Authority has hosted several meetings that were well-attended by Community of Acton and Community of Agua Dulce Town Councils and residents in the City of Palmdale and the City of Santa Clarita on May 29, 2014 and June 5, 2014, respectively. These stakeholders were also present at the scoping meeting in the Community of Acton on August 11, 2014, and more than 250 people attended the community open house in the Community of Acton on December 13, 2014. CWGs were also held in the Community of Acton on March 7, 2015 and April 25, 2015. In addition, both the Southern California Regional Director and the Authority Board Chair have taken tours with local community leaders to better understand their issues. Key concerns for these communities include above-ground alignments and their potential noise/vibration and aesthetic impacts, particularly on schools, residences, and equestrian resources. Community of Agua Dulce residents in particular support the possibility of an alternative alignment to the City of Burbank under the Angeles National Forest, although some Community of Acton residents remain concerned about those options because of the possible route through eastern Community of Acton and impacts to community and environmental resources.

1.8.5.3 City of Santa Clarita

The Authority has held recurring meetings with the City of Santa Clarita and key stakeholders throughout the AA process, including on November 14, 2014 with the Ad-Hoc City Council Committee on High-Speed Rail and city staff. The Authority conducted an alignment tour within the City of Santa Clarita limits on January 26, 2015 with Chairperson Dan Richard. In addition, the Authority held community open house meetings attended by city staff and elected officials on June 5, 2014 and December 2, 2014, as well as a scoping meeting in the City of Santa Clarita on August 5, 2014. City staff and elected officials also attended regional legislative staff briefings on September 12, 2014, November 20, 2014, February 19, 2015, April 8, 2015 and May 15, 2015. Elected officials and city staff have also attended the CWGs on March 3, 2015 and April 22, 2015.

The City of Santa Clarita City Council has not taken an official position on the project; however the Ad-Hoc Committee members have expressed support for studying an alternative route under the Angeles National Forest, as it would avoid the City of Santa Clarita entirely. During dialogues with city staff and members of the City Council, concerns about impacts, such as property value, visual, noise/vibration (sensitive receptors), access and safety, and impacts to churches and schools have been raised. These concerns were expressed at the Authority Board meeting on October 14, 2014 and in written correspondence. They have responded positively to the proposed changes to the alignments through the City of Santa Clarita. City staff and members of City Council are also concerned about potential impacts to the Sand Canyon community along Sand Canyon Road that are crossed by the April 2012 SAA alignments.

1.8.5.4 City of San Fernando

The City of San Fernando is a key stakeholder within the Palmdale to Burbank Project Section. The Authority held briefings with the current Mayor Pro Tem, City Councilmembers, and city staff on August 26, 2014, November 12, 2014, and January 20, 2015 to provide updates on the project status and next steps. The City is most concerned about the potential noise, safety, and aesthetic impacts from the proposed SR14 Corridor, as well as businesses located downtown, particularly where the rail ROW is less than 100 feet. City representatives raised the question of examining tunnel or trench alignments through the City of San Fernando, rather than the current at-grade proposal. The Authority held a scoping meeting in the Community of Sylmar on August 14, 2014 and a community open house in the City of San Fernando on December 9, 2014, both of which were attended by city staff and elected officials. At these meetings, the City of San Fernando representatives re-iterated their desire for a tunnel or trench option through the City of San Fernando, and their preference for the alignments under the Angeles National Forest. Elected officials and city staff also attended the legislative staff briefings on September 12, 2014, November 19, 2014, February 19, 2015, April 8, 2015, and May 15, 2015 as well as the CWGs on February 24, 2015 and April 23, 2015. City staff attended the "Communities Against Displacement" meeting that the Authority participated in on February 28, 2015.

1.8.5.5 City of Burbank

The Authority has continued its dialogue with the City of Burbank staff and members of City Council throughout the AA process. The most recent meetings with city staff occurred on February 3 and 19, 2015 and April 9, 2015. As part of these meetings, the Authority coordinated with city staff on City of Burbank and state infrastructure projects, including the planned Burbank and Magnolia bridge work, the Empire project as well as potential station locations. City staff also attended the regional legislative staff briefings held on September 9, 2014, November 19, 2014, and April 9, 2015.

The City Council has remained neutral on the HSR Project and the proposed Burbank Airport Station option in the San Fernando Valley. The Burbank Transportation Commission and Burbank City Council held a joint meeting on September 9, 2014, where the Authority provided an update on the project, status, and upcoming community meetings. At these meetings, the City of Burbank elected officials expressed positive views towards the project, but emphasized the need to minimize impacts and maximize benefits

for the city and its residents and businesses. They commended the outreach effort and requested that their staff remain actively involved as the environmental analysis continues, and directed staff to work with the Authority on station area planning.

The Authority has continued community outreach in this area. City staff attended the community open house held in the City of Burbank on December 8, 2014, and a scoping meeting that was held on August 6, 2014, as well as the CWG meetings held on March 4, 2015 and April 13, 2015.

1.8.5.6 City of Glendale

The Authority has continued to update the City of Glendale through direct interaction with city staff throughout the AA process. On September 9, 2014, the Authority briefed city staff regarding the proposed alignment alternatives, station options, and proposed grade separations within or adjacent to the city. The Authority also met with city staff on January 28, 2015 to provide an update and discuss ways to increase coordination moving forward.

Overall, city staff remains supportive of the HSR Project and is interested in maintaining an open dialogue with the Authority along with the City of Burbank and with representatives from the Bob Hope Airport.

1.8.5.7 City of Los Angeles

In the form of two Technical Working Groups (SR134-LAUS and San Fernando Valley), there have been briefings with the Mayor's office and City Councilmembers, and a collaborative relationship with the City of Los Angeles departments of Planning, Transportation, and Bureau of Engineering on an individual level. The Authority has briefed the City of Los Angeles throughout the SAA process as alignment alternatives, station options, and interconnectivity with other transit and development projects remains a top priority for both the City of Los Angeles and the Authority. The most recent meetings have taken place on the following dates:

- August 5, 2014: City of Los Angeles staff
- September 2, 2014: Councilmember O'Farrell staff
- September 4, 2014: Councilmember Cedillo staff
- November 25, 2014: Councilmember Fuentes and staff
- May 4, 2015: Councilmember Fuentes and staff

In addition, City Councilmember staff have attended the regional legislative staff briefings. Staff from Councilmember Fuentes' office attended the briefings on September 9, 2014, November 19, 2014, February 19, 2015, April 8, 2015, and May 15, 2015, as well as the CWG meetings on February 23, 2015, March 9, 2015, April 14, 2015, and April 21, 2015. Councilmember Fuentes also gave Chairperson Dan Richard a tour of his district and the proposed alignments on February 23, 2015. Staff from Councilmember Martinez' office attended the November 19, 2014, February 19, 2015, and April 9, 2015 legislative briefings, as well as the March 9, 2015 and April 20, 2015 CWG meetings. Through these dialogues, city staff were supportive overall of the HSR Project given the TOD and job creation opportunities, especially with the option of a station within the City of Los Angeles boundary; however, concerns remain related to impacts caused by the design of the alignment alternatives.

Specifically, some members of the City Council along with city staff are concerned about impacts to adjacent businesses within the San Fernando Valley (primarily from the at-grade option), traffic congestion, grade separation impacts, possible interference with water crossings, horse crossings, interaction with LAUS and the surrounding land uses, and impacts to the bike path currently being constructed in the Metro ROW through the San Fernando Valley. Councilmember Fuentes has taken a particular interest in the project, since all of the proposed alternatives (including those under the Angeles National Forest) would traverse his district. He and his staff are focused on ensuring that impacts are minimized, while recognizing the potential benefits the project could bring to Southern California and his district.

1.8.6 Select Elected Officials - Los Angeles County Board of Supervisors

From the inception of the project through the AA process, the Authority has maintained ongoing communications with Supervisor Antonovich's office given that the location of the proposed alignment alternatives fall within his district. As a result of the frequent dialogue between the Authority and district staff regarding alignment alternatives and station options, staff has shared their appreciation for the robust analysis of alignment and station alternatives and the outreach performed within the Supervisor's district, but also has concerns regarding impacts on the district and ways to continue to refine the alternatives to minimize those impacts. The most recent briefings with the Supervisor's staff occurred on August 1, 2014, December 23, 2014, and May 18, 2015. The Supervisor's staff also attended the tour with Chairperson Dan Richard in the City of Santa Clarita on January 26, 2015.

The Authority reached out to the Supervisor's office regarding the Permission to Enter process and the community meetings held in May to June and November to December 2014, as well as the scoping meetings held in August 2014. Supervisor Antonovich's staff has attended many of those community meetings, as well as the CWG meetings on February 25, 2015, March 2, 2015, March 3, 2015, April 14, 2015, April 22, 2015, and April 25, 2015 and the regional legislative briefings held on September 12, 2014, November 19, 2014, February 19, 2015, April 8, 2015, and April 9, 2015.

The Authority has also met with newly-elected Supervisor Kuehl's staff to brief and update them on the project. Those meetings were held on January 21, 2015 and May 1, 2015.

1.8.7 Select Agencies - Los Angeles County Metropolitan Transportation Authority (Metro) and Metrolink

The Authority has continued to work closely with Metro and Metrolink staff throughout the AA process, and often partners with Metro in various stakeholder discussions. Since June 2014, formal discussions in the form of outreach coordination meetings with Metro and Metrolink took place on the following dates: June 16, 2014, July 21, 2014, August 18, 2014, September 15, 2014, November 17, 2014, and December 15, 2014 in the form of a monthly outreach coordination meeting with other Southern California outreach teams. In addition, the Authority had a general meeting with Metro staff on a range of issues on July 22, 2014 and meetings regarding Rancho Vista on July 22, 2014 and December 17, 2015.

Through these meetings with the Authority, Metro staff has stated their preference for locating the HSR tracks on the west side of the Metro ROW through the San Fernando Valley. Their main concerns with locating the HSR on the east side of the ROW is that it would cut off existing and potential rail freight customers for Union Pacific Railroad (UPRR) who have rights to operate on the Metro ROW, in addition to (Metro or HSR) requiring acquisition of additional ROW for Metro to relocate their tracks to the west side of the ROW before HSR construction begins.

In the City of Palmdale, Metro staff supports the city staff and City Council in their preference of either the SR14 East or SR14 Hybrid alignments because of the connection to the existing PTC with passenger connections. As part of this coordination, the Authority has participated in meetings on the HDC project on July 8, 2014, February 17, 2015, February 19, 2015, March 6, 2015, and March 23, 2015.

1.9 Previously and Newly Identified Alternatives

In the 2010 PAA, the Palmdale to Los Angeles Section was analyzed for potential alignment alternatives, station locations, and design options from the City of Palmdale to Los Angeles Union Station. The 2011 SAA reevaluated the Palmdale to Los Angeles Section from LAUS to Sylmar, and the 2012 SAA focused solely on the Community of Sylmar to City of Palmdale area. The 2014 SAA reevaluated all alignment alternatives and station options for the Palmdale to Los Angeles Section and recommended splitting the Palmdale to Los Angeles Project Section into a Palmdale to Burbank Project Section and a Burbank to Los Angeles Project Section.

Figure 1.9-1 shows the alternatives as identified in the 2014 SAA to be carried forward for analysis in future environmental documents. An all-inclusive list of the alternatives previously identified through the AA process is identified in Table 1.9-1 below, along with the recommendations of this SAA (labeled as "SAA 2015"). Please note that the table is divided into three sections: the PAA, SAAs from 2011, 2012, and 2014, and the 2015 SAA. The PAA and 2015 SAA analyzed the alternatives under a different geographic context than the other SAAs. Therefore, they are standalone portions of this table.

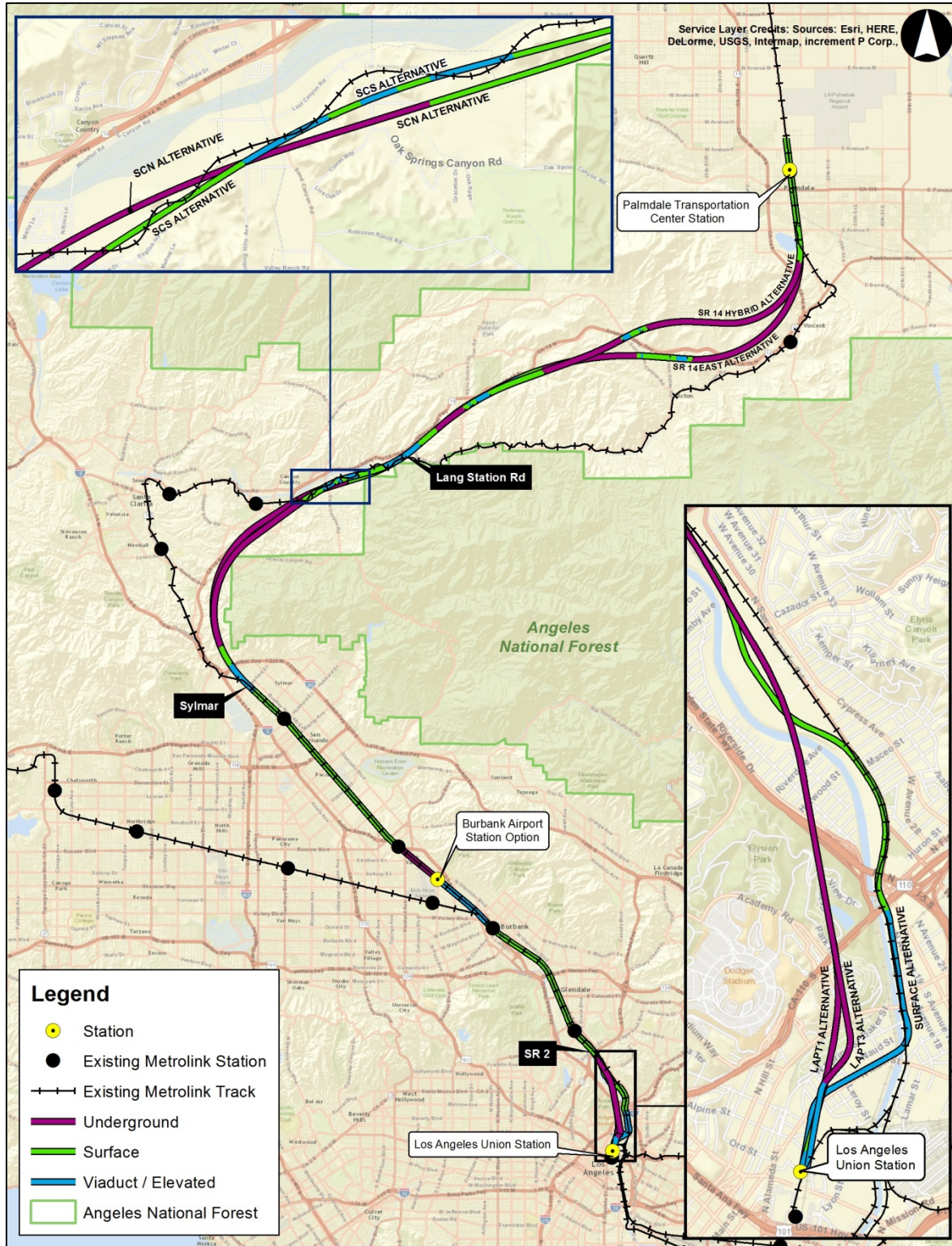


Figure 1.9-1
Alignment Alternatives and Station Locations Carried Forward in the 2014 SAA

Table 1.9-1 Palmdale to Burbank Corridor Alignment Alternatives and Station Options

Alignment Alternatives and Station Options	Carried Forward	Withdrawn
PAA (2010)^a		
SR14 East Alignment Alternative	X	
SR14 West Alignment Alternative	X	
SR14 South Alignment Alternative		X
Soledad Canyon Alignment Alternative		X
Palmdale East/Palmdale Transportation Center Station Option	X	
Palmdale West Station Option	X	
SAA (2011, 2012, 2014)		
SR14 East Alignment Alternative	SAA 2011, 2012, 2014	
SR14 Hybrid Alignment Alternative	SAA 2012, 2014	
SR14 West Alignment Alternative	SAA 2011, 2012	SAA 2014
Palmdale East/Palmdale Transportation Center Station Option	All AAs	
Palmdale West Station Option	SAA 2011, 2012	SAA 2014
Santa Clarita North Alignment Alternative	SAA 2012, 2014	
Santa Clarita South Alignment Alternative	SAA 2012, 2014	
Sand Canyon River Alignment Alternative		SAA 2012
HSR to the East of Metrolink Alignment Alternative	All AAs	
HSR to the West of Metrolink Alignment Alternative	SAA 2014 (reintroduced)	PAA
San Fernando Station Option	PAA, SAA 2011, 2012	SAA 2014
Pacoima Wash Station Option		SAA 2011
Branford Street Station Option	PAA, SAA 2011, 2012	SAA 2014
Burbank Airport Station Option	All AAs	
Burbank Metrolink Station Option	PAA	SAA 2011
<i>Grade Crossing Profile Options through the San Fernando Valley</i>		
Profile A – predominantly at-grade with HSR elevated	All AAs	
Profile B1 – predominantly at-grade with roads elevated	All AAs	
Profile B2 – predominantly at-grade with roads depressed	All AAs	
Profile C – predominantly at-grade with HSR depressed	All AAs	
2015 SAA^a		
SR14-1 (SR14 Hybrid-SCN-SFW)	SAA 2015	
SR14-2 (SR14 Hybrid-SCS-SFW)	SAA 2015	
SR14-3 (SR14 East-SCN-SFW)		SAA 2015
SR14-4 (SR14 East-SCS-SFW)		SAA 2015
E1a	SAA 2015	
E1b	SAA 2015	
E2a	SAA 2015	
E2b	SAA 2015	
E3a	SAA 2015	
E3b	SAA 2015	
<i>Burbank Station Options</i>		
Station Option A	SAA 2015	
Station Option B	SAA 2015	
Station Option C	SAA 2015	
<p>Note: ^a The PAA and 2015 SAA analyzed the alternatives under a different geographic context than the other SAAs. Therefore, they are standalone portions of this table.</p> <p>Source: Palmdale to Los Angeles Preliminary Alternative Analysis, 2010; Palmdale to Los Angeles Supplemental Alternative Analyses, 2011, 2012, and 2014.</p>		

2 Description and Analysis of Modifications and Newly Identified Alternatives

2.1 Alignments and Stations Proposed by the Public

During the outreach period from December 2014 through January 2015, members of the public submitted comments that proposed alignment and station locations between the City of Palmdale and the City of Burbank. This included drawing on maps at the open houses. For example, alignments were drawn to avoid a certain property or perceived noise impacts. Figure 2.1-1 shows these alignments and stations compared to the Authority's proposed alignments. The Authority took the feedback from these suggestions and comments into consideration when further developing project alternatives as described below.

2.2 Refinements Since the 2014 SAA

The Authority is proposing several refinements to the SR14 Corridor since the 2014 SAA. They are described below along with accompanying figures to demonstrate the change. These refinements have been incorporated into the quantitative analysis of the alignments and station options as shown in Evaluation Table 1 of Appendix A.

2.2.1 Shift within the City of Palmdale

Following further coordination efforts with the City of Palmdale, and to take into account the planned HDC project and minimize disruption to existing railroad operations, the Authority has refined the alignment and station design. The result is a shift of the Palmdale-area alignment, including the station, to the west of the proposed alignment of the 2014 SAA by approximately 200 feet. This westward shift would begin near Avenue O in the City of Palmdale and continue to Avenue S in the City of Palmdale (Figure 2.2-1). This design modification may decrease disruption to existing railroad operations and may eliminate the need for a long intrusion protection barrier to be constructed between the HSR alignment and existing railroad lines. In addition to the westward shift, the proposed station has been located ¼-mile to the south from the location in the 2014 SAA. The proposed alignment and station shift applies to the alternatives in both the SR14 and East Corridors.

2.2.2 Lake Palmdale Avoidance

Upon further coordination with the City of Palmdale, the Authority has refined the proposed alignment in order to avoid Lake Palmdale (Figure 2.2-2). This refinement is applicable to all alignments within the Palmdale to Burbank Section. Beginning near Avenue S in the City of Palmdale, the refinement would cross the prior alignments of the 2014 SAA to the east (shown in gray in Figure 2.2-2), avoiding Lake Palmdale. The refinement would require the relocation of Una Lake. Any potential impacts to Una Lake have been incorporated into the alignment analysis in Appendix A. South of Una Lake, the proposed alignments separate, with the proposed SR14 Corridor alignments beginning to turn westward and the East Corridor alignments continuing to the south.

2.2.3 Refinements near the Community of Acton

As a result of public input received through the scoping process and in coordination with the alignment modification at Lake Palmdale as described above, design refinements have been incorporated into the proposed SR14 Corridor alignments as they head south and west from Lake Palmdale (Figure 2.2-3). Both proposed alignments have been shifted to the east and south of the prior alignments proposed in the 2014 SAA (shown in gray in Figure 2.2-3). There would be fewer potential residential impacts near Red Rover Mine Road, a simplified crossing of the SR14, and fewer potential impacts to the Vasquez High School.

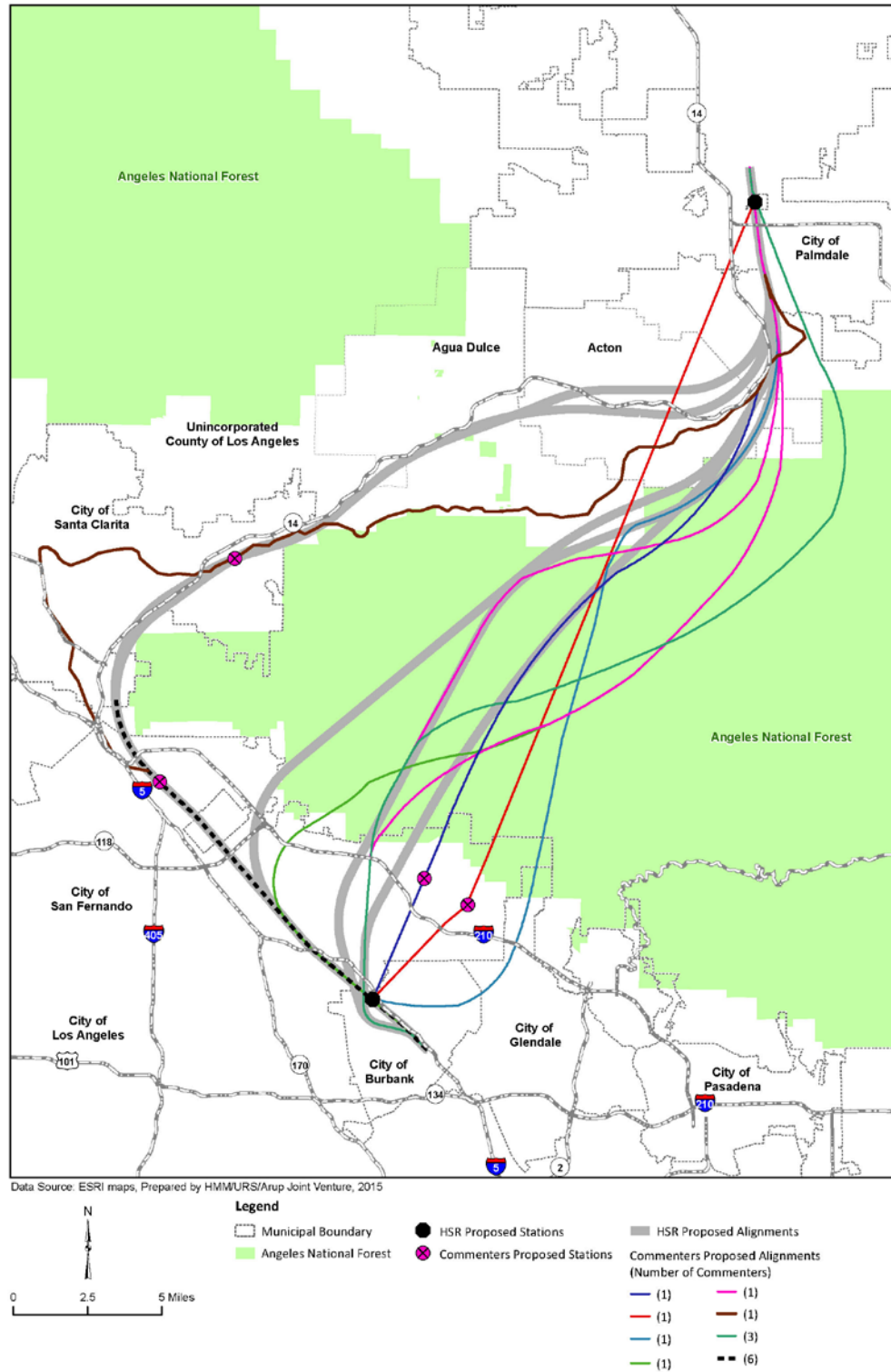


Figure 2.1-1
Alignments Proposed by the Public

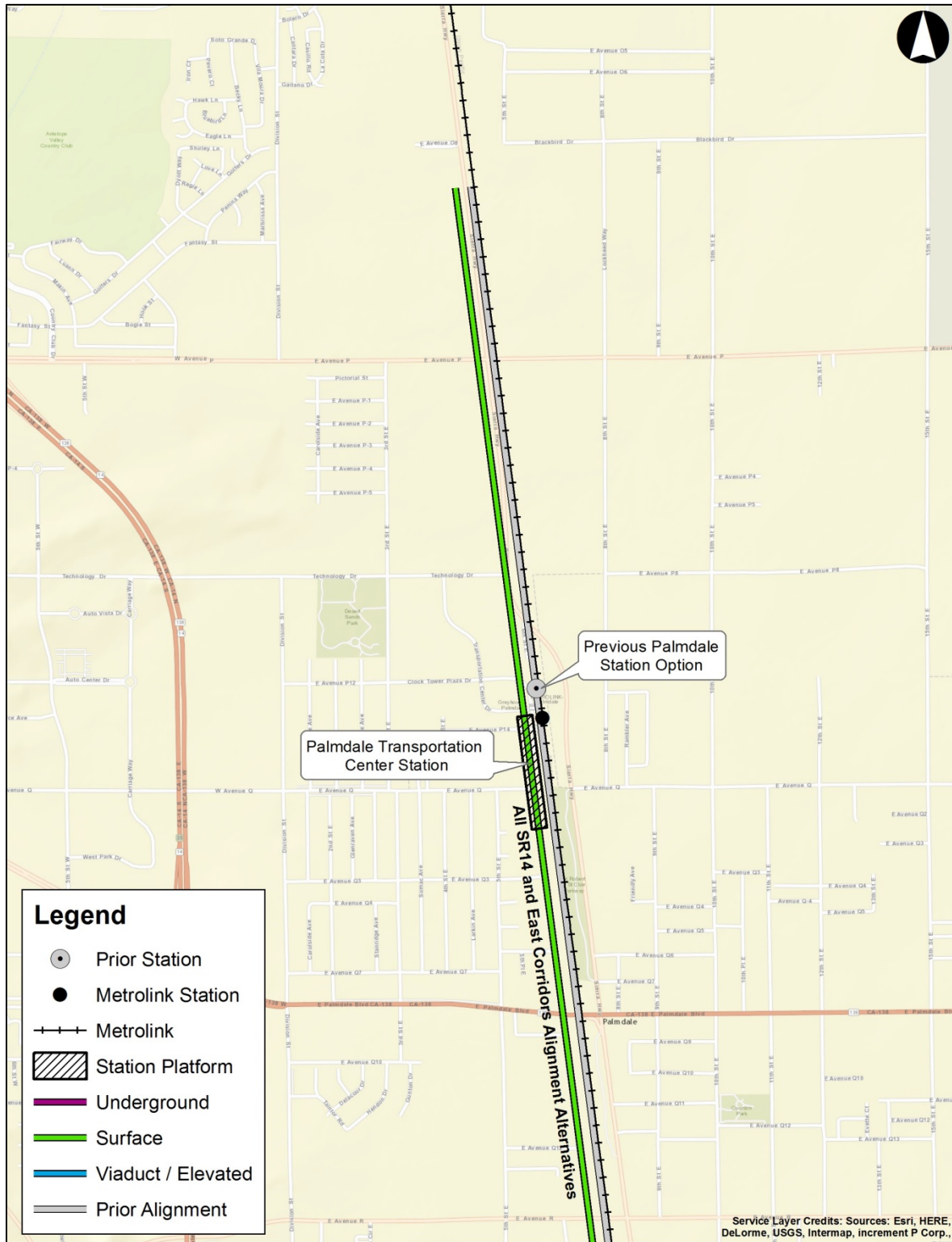


Figure 2.2-1
Refinements in the Palmdale Area Alignment

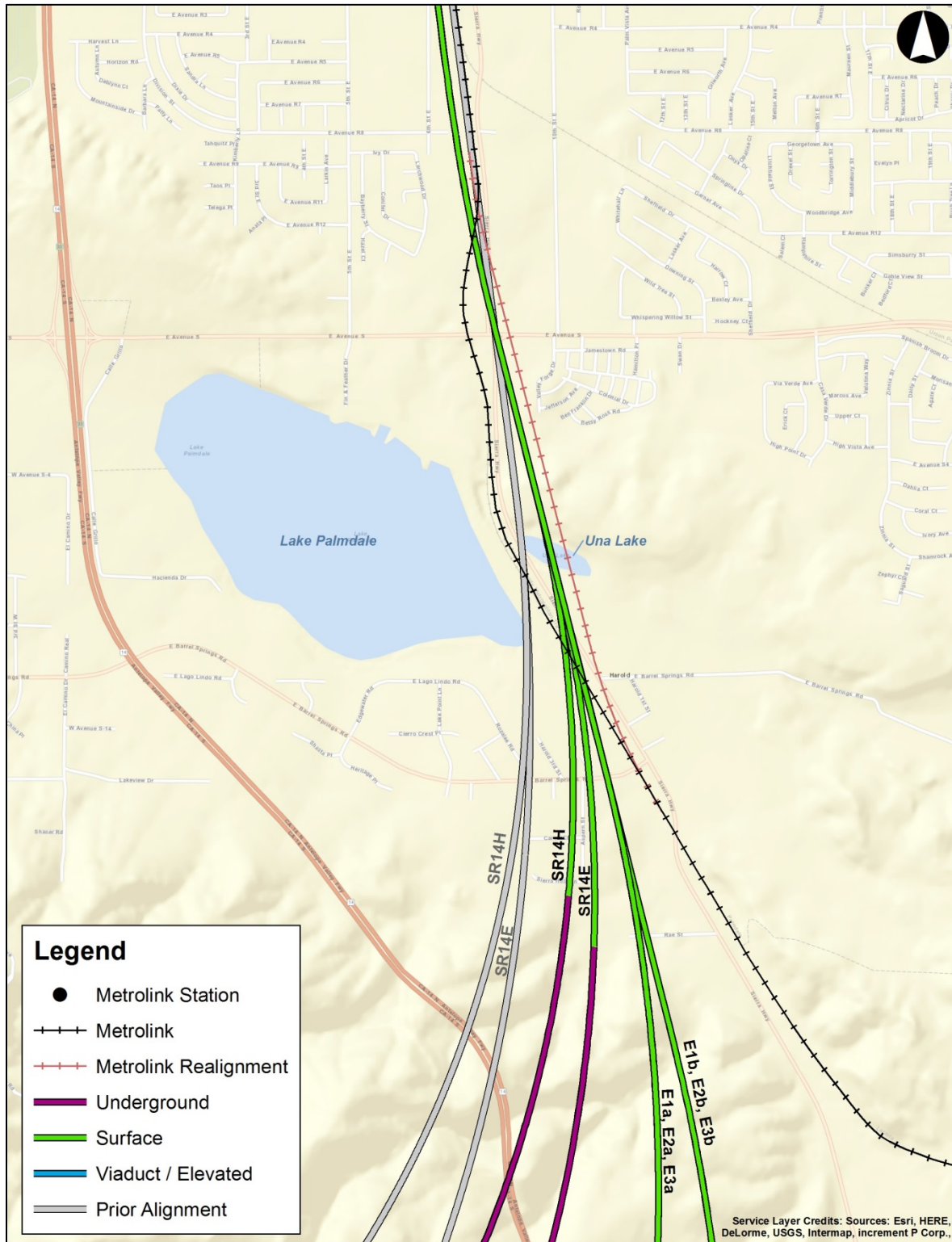


Figure 2.2-2
Design Refinements at Lake Palmdale

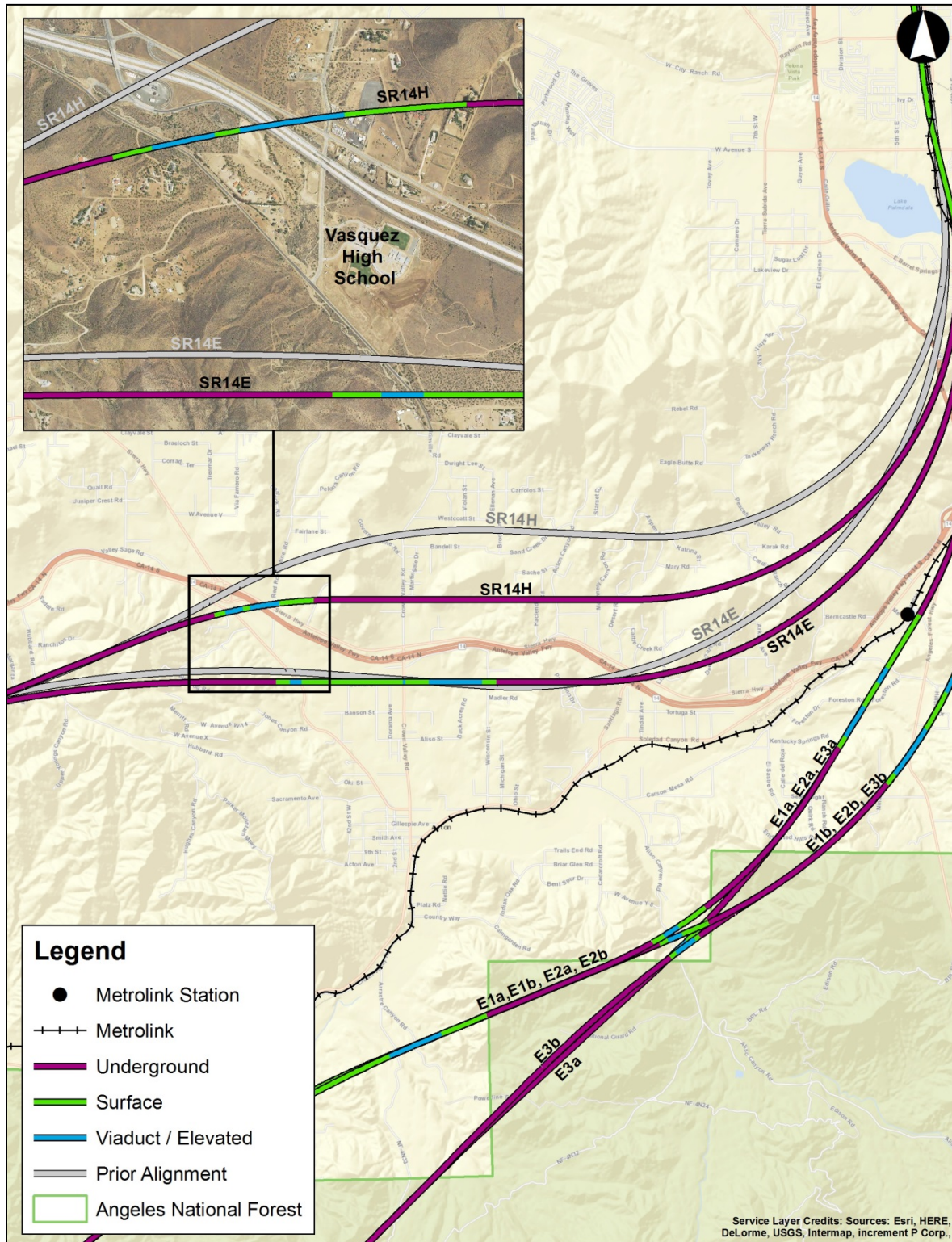


Figure 2.2-3
Design Refinements near the Community of Acton

2.2.4 Refinements near the City of Santa Clarita

The alignments recommended to be carried forward from the 2014 SAA in the area near the City of Santa Clarita consisted of Santa Clarita North (SCN) and Santa Clarita South (SCS). This SAA modifies the proposed SCN alignment (now known as SCLT) south of the City of Santa Clarita to have the same horizontal location as the SCS alignment (Figure 2.2-4). This results in an approximate ¼-mile shift of the proposed alignment to the southeast.

2.2.5 Withdrawal of the East Side San Fernando Valley Alignment

The 2014 SAA recommended that within the existing railroad ROW, both an east side and west side HSR alignment through the San Fernando Valley be carried forward for further environmental evaluation. Carrying forward both alignments has allowed flexibility for additional coordination with Metro and Metrolink regarding the Brighton to Roxford double track project, which will add a second set of conventional railroad tracks along the existing ROW from the Community of Sylmar to the City of Burbank. This continued coordination has enabled Metro and Metrolink to confirm that their Brighton to Roxford double track project design works best on the east side of the ROW, with the HSR alignment on the west side of the existing ROW. Additionally, UPRR has submitted written comments stating their preference for an HSR alignment on the west side of the existing ROW. This configuration would avoid the need to sever existing UPRR connections to industrial facilities on the east side of the ROW. Also, the proposed west side San Fernando Valley alignment would be closer to San Fernando Road, allowing for HSR maintenance access from the existing roadway. For these reasons, the west side San Fernando Valley alignment has been carried forward and the east side San Fernando Valley alignment has been withdrawn.

2.3 East Corridor Study Area

The possibility of additional alignments between the City of Palmdale and the City of Burbank was identified in the July 2014 NOP/NOI. Through the subsequent scoping process and in response to stakeholder and public feedback, the Authority identified potential alignment alternatives that generally follow the East Corridor between the existing PTC station and the Burbank Airport station. Further public input was received during open house meetings in December 2014, which also suggested studying a direct corridor. As part of the East Corridor study area initial design development, multiple potential alignment alternatives were identified and considered, including those suggested by public comments as described above. Based on engineering feasibility requirements, many of these potential alignments have not been advanced for further consideration because they did not meet feasibility requirements. As a result of this process, six alternatives that generally follow the East Corridor are being evaluated in this SAA. These alternatives are based on public comments and feedback, as well as engineering feasibility and practicability considerations. Figure 2.3-1 shows these alignment alternatives.

2.3.1 Description of East Corridor Alignment Alternatives

In the City of Palmdale, all East Corridor alignment alternatives would begin at-grade on the west side of Sierra Highway near Avenue O. The alternatives would run parallel to and approximately 200 feet west of the existing railroad ROW and continue south at-grade before approaching the existing PTC. The alternatives would accommodate the proposed HSR station in the vicinity of Avenue Q, ¼-mile south of the existing PTC. South of the PTC, the alternatives would continue at-grade and enter the existing 6th Street East ROW. The alternatives would remain in the 6th Street East ROW for approximately one mile before approaching Avenue R. South of Avenue R, the alternatives would continue through developed and undeveloped areas, crossing Sierra Highway at East Avenue S. South of Avenue S, the alternatives would continue east of Lake Palmdale and cross over Una Lake. Near Una Lake and Lake Palmdale, the alternatives would enter the San Andreas Fault Zone. The crossing of this fault must be essentially “at-grade,” i.e. on low embankment, in shallow cut, or at-grade. Up to this point, all the East Corridor alternatives are identical.

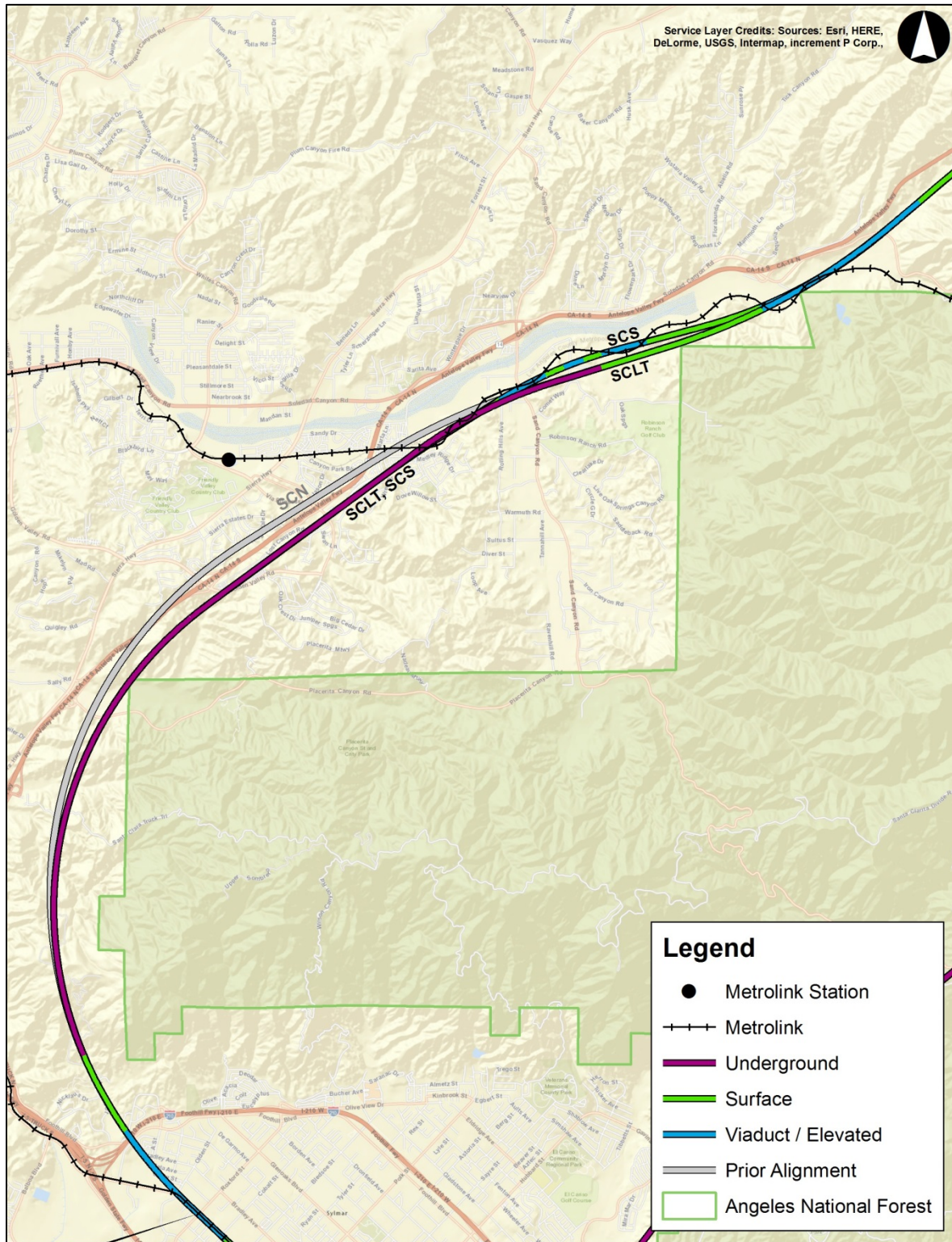


Figure 2.2-4
Design Refinements near the City of Santa Clarita

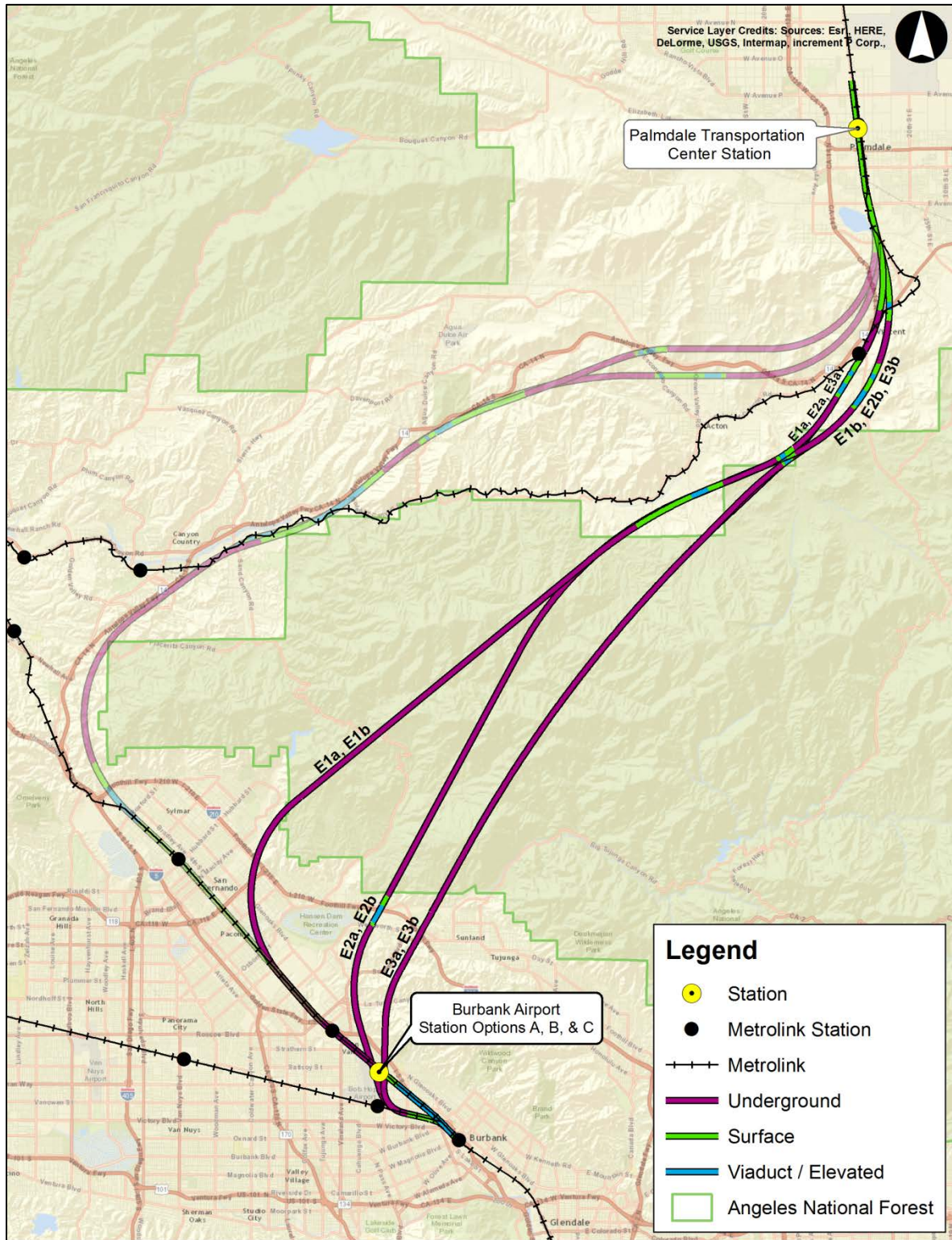


Figure 2.3-1
East Corridor Alignment Alternatives and Station Options

2.3.1.1 E1a Alignment Alternative

South of Lake Palmdale, this alternative would pass over the California Aqueduct. South of the California Aqueduct, this alternative would continue south and cross the interchange between Sierra Highway and SR14, approximately 330 feet east of SR14. Continuing south, the alternative would cross an existing parking lot and vacant areas before crossing the intersection of Sierra Highway and Angeles Forest Highway. Approximately 250 feet south of the intersection of Sierra Highway and Angeles Forest Highway, the alternative would cross the Metrolink Antelope Valley line. The alternative would continue south running between West Carson Mesa Road and Angeles Forest Highway, crossing Vincent View Road to the east of the Vincent Grade/Acton Metrolink Station. The alternative would run to the west of the Vincent Substation (an electrical substation operated by Southern California Edison).

South of Vincent Substation, the alternative would enter an approximately 1.9 mile tunnel, rising to an at-grade profile outside the Angeles National Forest approximately 0.4 miles east of the intersection of Aliso Canyon Road and West Avenue Y8.

The alternative would continue above ground for approximately 0.5 miles, crossing Aliso Canyon Road, and then enter a tunnel approximately 1.6 miles long, partially within the Angeles National Forest boundary. As the alternative comes out of the Angeles National Forest boundary, the alignment becomes at-grade again for three miles. The alternative would cross Arrastre Canyon Road, Moody Truck Trail, Bootlegger Canyon Road, and one watercourse. This above-ground section roughly parallels the Santa Clara River in Soledad Canyon. At its closest point, the alternative is approximately 0.25 miles from the Santa Clara River.

Approximately 0.6 miles west of Bootlegger Canyon Road, this alternative would enter a 17.1 mile tunnel which would pass under the San Gabriel Mountains and San Gabriel Mountains National Monument. The E1a/b alignment presented in this SAA is shifted to the west, and is in a longer tunnel than the E1 alignment presented at the public open house meetings in December 2014. As design for this alternative advances, every effort will be made to utilize existing service roads for construction and maintenance access where possible, but some re-grading may be necessary to meet access requirements to portals and other structures, as well emergency access/egress for first responders.

The tunnel continues under the northeast part of the Community of Pacoima in the City of Los Angeles and would end at approximately Montague Street just north of its intersection with San Fernando Road. The alternative would be in trench through existing industrial and commercial areas, and would then cross the channelized Tujunga Wash. South of Tujunga Wash the alternative would merge with Metrolink's Antelope Valley Line corridor, and follow it until the Burbank Airport Station, with grade separating cross streets as necessary.

2.3.1.2 E1b Alignment Alternative

South of Lake Palmdale, this alternative would pass over the California Aqueduct. South of the California Aqueduct, this alternative would cross Pearblossom Highway and the Metrolink Antelope Valley line near Pearblossom Highway's intersection with SR14. South of East Carson Mesa Road, this alternative would enter an approximate 1.2 mile tunnel, rising to an at-grade and viaduct profile as it passes east of the Vincent Substation. South of Vincent Substation, the alternative would cross Angeles Forest Highway and enter an approximate 2.0 mile tunnel bearing southwest. Part way into this tunnel, the alternative would enter the Angeles National Forest.

At the other end of the tunnel, the alternative would continue above ground for approximately 0.5 miles, crossing Aliso Canyon Road, and then enter a tunnel approximately 1.7 miles long, partially within the Angeles National Forest boundary. As the alternative comes out of the Angeles National Forest boundary, the alignment would be at-grade again for 2.7 miles. The alternative would then cross Arrastre Canyon Road, Moody Truck Trail, Bootlegger Canyon Road, and one watercourse. This above-ground section

roughly parallels the Santa Clara River in Soledad Canyon. At its closest point, the alternative is approximately 0.25 miles from the Santa Clara River.

Approximately 0.6 miles west of Bootlegger Canyon Road, this alternative would enter a 17.1 mile tunnel which would pass under the San Gabriel Mountains and San Gabriel Mountains National Monument. The E1a/b alignment presented in this SAA has shifted to the west, and is in a longer tunnel than the E1 alignment presented at the public open house meetings in December 2014. As design for this alternative advances, every effort will be made to utilize existing service roads for construction and maintenance access where possible, but some re-grading may be necessary to meet access requirements to portals and other structures, as well emergency access/egress for first responders.

The tunnel continues under the northeast part of the Community of Pacoima and would end at approximately Montague Street just north of its intersection with San Fernando Road. The alternative would be in trench through existing industrial and commercial areas, and would then cross the channelized Tujunga Wash. South of Tujunga Wash, the alternative would merge with Metrolink's Antelope Valley Line corridor, and follow it until the Burbank Airport Station, with grade separating cross streets as necessary.

2.3.1.3 E2a Alignment Alternative

South of Lake Palmdale, this alternative would pass over the California Aqueduct. South of the California Aqueduct, this alternative would continue south and would cross the interchange between Sierra Highway and SR14, approximately 300 feet east of SR14. Continuing south, the alternative would cross an existing parking lot and vacant areas, before crossing the intersection of Sierra Highway and Angeles Forest Highway. Approximately 250 feet south of the intersection of Sierra Highway and Angeles Forest Highway, the alternative would cross the Metrolink Antelope Valley line. The alternative would continue south running between West Carson Mesa Road and Angeles Forest Highway, crossing Vincent View Road to the east of the Vincent Grade/Acton Metrolink Station. The alternative would run to the west of the Vincent Substation.

South of Vincent Substation, the alternative would enter an approximately 1.5 mile tunnel, rising to an at-grade profile outside the Angeles National Forest approximately 0.4 miles east of the intersection of Aliso Canyon Road and West Avenue Y8.

The alternative would continue above ground for approximately 0.5 miles, crossing Aliso Canyon Road, and then enter a tunnel approximately 1.6 miles long, partially within the Angeles National Forest boundary. As the alternative comes out of the Angeles National Forest boundary, the alignment becomes at-grade again for three miles. The alternative would cross Arrastre Canyon Road, Moody Truck Trail, Bootlegger Canyon Road, and one watercourse on viaduct. This above-ground section approximately parallels the Santa Clara River in Soledad Canyon. At its closest point, the alternative is approximately 0.25 miles from the Santa Clara River.

This alternative then enters an approximate 12 mile tunnel in a similar location to the start of the E1a's 17.1 mile tunnel, but bears a more southerly direction through the San Gabriel Mountains and San Gabriel Mountains National Monument. As design for this alternative advances, every effort will be made to utilize existing service roads for construction and maintenance access where possible, but some re-grading may be necessary to meet access requirements to portals and other structures, as well emergency access/egress for first responders.

The tunnel's south portal is outside of the Angeles National Forest boundary in the Lake View Terrace neighborhood along Dominica Avenue. Through the Lake View Terrace area, this alternative would pass through the Lake View Terrace neighborhood at-grade and on structures in-between Wheatland and Dominica Avenues. The alternative would cross on a viaduct profile over Foothill Boulevard, the Interstate (I) 210 freeway, and Tujunga Wash. South of the Tujunga Wash, the alternative would cross Wentworth Street, and then enter a four mile tunnel under the Shadow Hills neighborhood and turn east on a 160

mph curve. The alternative then enters the City of Burbank in cut-and-cover tunnel, continuing to an underground Burbank Airport Station.

Since this alternative does not join Metrolink's Antelope Valley Line at the Bob Hope Airport, additional tracks would have to be constructed south of the underground Burbank Airport Station to provide a route for HSR trains to join the Antelope Valley Line and ultimately lead to LAUS. To accomplish this, the route will be constructed in cut section and will join the Metrolink Ventura County Line east of North Hollywood Way, and then curve to the south at West Burbank Boulevard to begin joining the Antelope Valley Line. A ¼ mile south of West Burbank Boulevard, this alternative would join the Metrolink Antelope Valley Line. The curves required for merging with the Ventura County Line and then the Antelope Valley Line corridors have reduced speeds of 100 mph.

2.3.1.4 E2b Alignment Alternative

South of Lake Palmdale, this alternative would pass over the California Aqueduct. South of the California Aqueduct, this alternative would cross Pearblossom Highway and the Metrolink Antelope Valley line near Pearblossom Highway's intersection with SR14, requiring new HSR structures. South of East Carson Mesa Road, this alternative would enter an approximate 1.2 mile tunnel, rising to an at-grade profile as it passes east of the Vincent Substation. South of Vincent Substation, the alternative would cross Angeles Forest Highway and enter an approximate 1.8 mile tunnel bearing southwest. Part way into this tunnel, the alternative would enter the Angeles National Forest.

At the other end of the tunnel, the alternative would continue above ground for approximately 0.5 miles, crossing Aliso Canyon Road, and then enter a tunnel approximately 1.7 miles long, partially within the Angeles National Forest boundary. As the alternative comes out of the Angeles National Forest boundary, the alignment is at-grade again for three miles. The alternative would cross Arrastre Canyon Road, Moody Truck Trail, Bootlegger Canyon Road, and one watercourse on new structures. This above-ground section approximately parallels the Santa Clara River in Soledad Canyon. At its closest point, the alternative is approximately 0.25 miles from the Santa Clara River.

This alternative then enters an approximately 12 mile tunnel in a similar location to the start of the E1a's 17.1 mile tunnel, but bears a more southerly direction through the San Gabriel Mountains. As design for this alternative advances, every effort will be made to utilize existing service roads for construction and maintenance access where possible, but some re-grading may be necessary to meet access requirements to portals and other structures, as well emergency access/egress for first responders.

The tunnel's south portal is outside of the Angeles National Forest boundary in the Lake View Terrace neighborhood along Dominica Avenue. Through the Lake View Terrace area, this alternative would pass through the Lake View Terrace neighborhood at-grade and on structures in-between Wheatland and Dominica Avenues. The alternative would cross on a viaduct over Foothill Boulevard, the I-210 freeway, and Tujunga Wash. South of the Tujunga Wash, the alternative would cross Wentworth Street, and then enter a four mile tunnel under the Shadow Hills neighborhood and turn east on a 160 mph curve. The alternative then enters the City of Burbank in cut-and-cover tunnel, continuing to an underground Burbank Airport Station.

Since this alternative does not join Metrolink's Antelope Valley Line at the Bob Hope Airport, additional tracks would have to be constructed south of the underground Burbank Airport Station to provide a route for HSR trains to join the Antelope Valley Line and ultimately lead to LAUS. To accomplish this, the route will be constructed in cut section and will join the Metrolink Ventura County Line east of North Hollywood Way, and then curve to the south at West Burbank Boulevard to begin joining the Antelope Valley Line. A ¼ mile south of West Burbank Boulevard, this alternative would join the Metrolink Antelope Valley Line. The curves required for merging with the Ventura County Line and then the Antelope Valley Line corridors have reduced speeds of 100 mph.

2.3.1.5 E3a Alignment Alternative

South of Lake Palmdale, this alternative would pass over the California Aqueduct. South of the California Aqueduct, this alternative would continue south and would cross the interchange between Sierra Highway and SR14, approximately 255 feet east of SR14. Continuing south, the alternative would cross an existing parking lot and vacant areas, before crossing the intersection of Sierra Highway and Angeles Forest Highway. Approximately 250 feet south of the intersection of Sierra Highway and Angeles Forest Highway, the alternative would cross the Metrolink Antelope Valley line. The alternative would continue south running between West Carson Mesa Road and Angeles Forest Highway, crossing Vincent View Road to the east of the Vincent Grade/Acton Metrolink Station. The alternative would run to the west of the Vincent Substation.

South of Vincent Substation, the alternative would enter a 1.6 mile tunnel, rising to an at-grade profile outside the Angeles National Forest approximately 0.5 miles east of the intersection of Aliso Canyon Road and West Avenue Y8. The alternative continues above ground in a southwesterly direction for approximately 0.5 miles, crossing Aliso Canyon Road. The alternative then enters a 13 mile long tunnel from the outside of the Angeles National Forest. The E3a/b alignment presented in this SAA is shifted to the east as compared to the E3 alignment presented at the public open house meetings in December 2014. As design for this alternative advances, every effort will be made to utilize existing service roads for construction and maintenance access where possible, but some re-grading may be necessary to meet access requirements to portals and other structures, as well emergency access/egress for first responders.

The alternative continues in a tunnel heading southwest through the Angeles National Forest, entering the City of Los Angeles east of the Lake View Terrace neighborhood. The tunnel alignment passes under the I-210 Freeway, Green Verdugo Reservoir, and La Tuna Canyon Road, where it curves east to continue in a southern direction.

The alternative emerges from the tunnel to a cut-and-cover profile approximately 200 feet south of I-5. The alternative continues in a cut-and-cover profile between Claybeck Avenue and North Hollywood Way through an existing residential neighborhood. South of San Fernando Boulevard, the cut-and-cover portion of the alternative continues south, roughly parallel to North Hollywood Way, to the Burbank Airport Station.

Since this alternative does not join Metrolink's Antelope Valley Line at the Bob Hope Airport, additional tracks would have to be constructed south of the HSR station to provide a route for HSR trains to join the Antelope Valley Line and ultimately lead to Los Angeles Union Station. To accomplish this, the route will join the Metrolink Ventura County Line east of North Hollywood Way, and then curve to the south at West Burbank Boulevard to begin joining the Antelope Valley Line. A ¼ mile south of West Burbank Boulevard, this alternative would join the Metrolink Antelope Valley Line. The curves required for merging with the Ventura County Line and then the Antelope Valley Line corridors have reduced speeds of 100 mph.

2.3.1.6 E3b Alignment Alternative

South of Lake Palmdale this alternative would pass over the California Aqueduct. South of the California Aqueduct, this alternative would cross Pearblossom Highway and the Metrolink Antelope Valley line near Pearblossom Highway's intersection with SR14, requiring new bridge structures. South of East Carson Mesa Road, this alternative would enter an approximately 1.2 mile tunnel, rising to an at-grade profile as it passes east of the Vincent Substation. South of Vincent Substation, the alternative would cross Angeles Forest Highway and enter an approximately two mile tunnel bearing southwest. Part way into this tunnel, the alternative would enter the Angeles National Forest.

At the other end of the tunnel, the alternative would continue above ground for approximately 0.5 miles, crossing Aliso Canyon Road, and then enter a tunnel approximately 13 miles long, from the outside of the Angeles National Forest. The E3a/b alignment presented in this SAA is shifted to the east as compared to

the E3 alignment presented at the public open house meetings in December 2014. As design for this alternative advances, every effort will be made to utilize existing service roads for construction and maintenance access where possible, but some re-grading may be necessary to meet access requirements to portals and other structures, as well emergency access/egress for first responders.

The alternative continues in a tunnel heading southwest through the Angeles National Forest, entering the City of Los Angeles east of the Lake View Terrace neighborhood. The tunnel alignment passes under the I-210 Freeway, Green Verdugo Reservoir, and La Tuna Canyon Road, where it curves east to continue in a southern direction.

The alternative emerges from the tunnel to a cut-and-cover profile approximately 200 feet south of I-5. The alternative continues in a cut-and-cover profile between Claybeck Avenue and North Hollywood Way through an existing residential neighborhood. South of San Fernando Boulevard, the cut-and-cover portion of the alternative continues south, roughly parallel to North Hollywood Way, to the Burbank Airport Station.

Since this alternative does not join Metrolink's Antelope Valley Line at the Bob Hope Airport, additional tracks would have to be constructed south of the HSR station to provide a route for HSR trains to join the Antelope Valley Line and ultimately lead to Los Angeles Union Station. To accomplish this, the route will join the Metrolink Ventura County Line east of North Hollywood Way, and then curve to the south at West Burbank Boulevard to begin joining the Antelope Valley Line. A ¼ mile south of West Burbank Boulevard, this alternative would join the Metrolink Antelope Valley Line. The curves required for merging with the Ventura County Line and then the Antelope Valley Line corridors have reduced speeds of 100 mph.

2.3.2 Description of Burbank Airport Station Options

2.3.2.1 Option A (2014 SAA Burbank Airport Station)

The 2014 SAA identified a Burbank Airport Station as the proposed station alternative within the San Fernando Valley. Although this proposal has not changed, the station platform location has shifted northwest within the existing railroad ROW (Station Option A) in order to improve connectivity to the Bob Hope Airport. Station Option A is in a similar location to the Hollywood Way Station discussed in the 2010 PAA. In the 2010 PAA, the Hollywood Way Station was withdrawn due to its design requiring a depressed profile that would have increased construction and operational complexity, as well as impacts and costs as compared to other station locations. Since the 2010 PAA, meetings with various agencies, including the Burbank-Glendale-Pasadena Airport Authority, have made it clear that it is necessary for any HSR alignment to have a depressed profile when running perpendicular to an active runway through its runway protection zone. Therefore, the station has been shifted to improve connectivity to the Bob Hope Airport. Station Option A is compatible with any of the SR14 Corridor alternatives and East Corridor alternatives E1a/b.

2.3.2.2 Options B and C

Additionally, in order to accommodate East Corridor alignment alternatives E2a/b and E3a/b, there are two new, below ground, station configurations proposed in this SAA (Station Options B and C) (Figure 2.3-2 and Table 2.3-1). The E2a/b and E3a/b alignment alternatives would require a shift of the station platforms to the south, oriented in a skewed north/south fashion west of North Hollywood Way (Option B) or oriented in a north/south fashion adjacent and parallel to North Hollywood Way (Option C). Additionally, the SR14 Corridor alignment alternatives and the East Corridor E1a/b alignment alternatives have the ability to connect to Station Option B, if so chosen.



Figure 2.3-2
Burbank Airport Station Configuration Options A, B, and C

Table 2.3-1 East Corridor Station Configuration Compatibility

East Corridor Alignment Alternative	Alignment Alternative Compatible With Burbank Airport Station		
	Option A ^a	Option B ^a	Option C
E1a/b	Yes	Yes	No
E2a/b	No	Yes	No
E3a/b	No	No	Yes
Note: ^a In addition, all four SR14 Corridor alignments are compatible with this Burbank Airport Station Option. Source: HMM/URS/Arup Joint Venture, 2015.			

2.3.3 Evaluation of East Corridor Alternatives

2.3.3.1 Overview

Table 2.3-2 consists of the non-tunnel measurement criteria that are primarily related to surface disruption. Table 1 in Appendix A provides all of the measurement criteria (including tunnel-related) used in the evaluation comparisons.

Please note that the evaluation of the alignments generally following the East Corridor compares only these alternatives between each other. The evaluation does not compare the East Corridor alternatives to the SR14 Corridor alternatives, which are discussed separately below. A comparative evaluation of all Project Section alternatives will be presented in the draft environmental document.

2.3.3.2 Resources of Significance to East Corridor Alignment Alternatives

Groundwater Resources

The proposed alignment alternatives would traverse areas within and outside the Angeles National Forest that are known to have significant groundwater resources, including public and private wells, naturally occurring springs and seeps, and drinking water aquifers. Impacts to these resources may be a significant challenge to construction wherever alignments would involve tunneling at or below the known water table level. Construction methods and engineering techniques would need to be developed to minimize or avoid groundwater loss and impacts to aquifers, where present. This could have direct subterranean impacts along with indirect impacts to surface aquatic resources, which in some locations may serve as suitable habitats for threatened or endangered species. The depth of the tunneling through the Angeles National Forest would influence design and constructability of the tunnel components due to potential high-pressure from the groundwater. The information gathered and used in this SAA is intended to identify these potential issues and risks associated with impacts to groundwater resources for future detailed evaluation. The environmental documents that will follow this SAA will provide substantial technical detail regarding the evaluation of groundwater resources within the project footprint as well as potential direct impacts to groundwater resources, such as wells and aquifers, and indirect impacts to surface aquatic resources that are potentially linked to groundwater resources at depth.

Cultural Resources

For cultural resources, a desktop level of analysis is widely acceptable during the AA evaluation. As part of the effort to coordinate with the United States Forest Service (USFS), a preliminary field survey was conducted in and adjacent to the Angeles National Forest in February 2015. The primary purpose of this cultural field survey was to identify areas where subsequent targeted surveys may yield important cultural resources information, which would inform the alternative selection and refinement process in future environmental documents.

Table 2.3-2 East Corridor – Summary of Non-Tunnel (Surface and Aerial) Evaluation Measurement Criteria³

Measurement Criteria	E1a	E1b	E2a	E2b	E3a	E3b
Section 4(f) and 6(f)						
<p>Parklands</p> <p><i>(Within 100 feet of the alignment centerline. A 100-foot buffer is intended to represent a typical right-of-way width for the HSR.)</i></p>	<p>3.5 acres 14 bike routes 1 Trail</p>	<p>3.5 acres 13 bike routes 1 Trail</p>	<p>4.6 acres 15 bike routes 1 trail</p>	<p>4.8 acres 13 bike routes 1 trail</p>	<p>2 acres 15 bike routes 0 trails</p>	<p>2 acres 14 bike routes 0 trail</p>
<p>Cultural Resources:</p> <p>Previously Recorded Archaeological Sites</p> <p><i>(Within the archaeology study area inclusive of alignment centerline plus 100-foot buffer)</i></p>	<p>12</p> <p>Of these, 1 may be considered a significant Archaeological Site.</p>	<p>11</p> <p>Of these, 1 may be considered a significant Archaeological Site.</p>	<p>11</p> <p>Of these, 1 may be considered a significant Archaeological Site.</p>	<p>2</p> <p>Of these, 1 may be considered a significant Archaeological Site.</p>	<p>11</p> <p>Of these, 1 may be considered a significant Archaeological Site.</p>	<p>9</p> <p>Of these, 1 may be considered a significant Archaeological Site.</p>
<p>Cultural Resources:</p> <p>Significant Historic Architectural Sites</p> <p><i>(Within historic architecture study area inclusive of alignment centerline plus 100-foot buffer)</i></p>	<p>3</p>	<p>2</p>	<p>3</p>	<p>2</p>	<p>3</p>	<p>2</p>

³ For most measurement criteria, tunnel profiles, as compared to non-tunnel profiles, are anticipated to have no potential surface impacts.

Table 2.3-2 East Corridor – Summary of Non-Tunnel (Surface and Aerial) Evaluation Measurement Criteria³

Measurement Criteria	E1a	E1b	E2a	E2b	E3a	E3b
Aquatic Resources⁴						
Wetland Habitats, Lakes, Ponds, Rivers, Reservoirs (acres)	10.7	12.7	26.2	27.9	9.6	9.2
Streams, Creeks, or Canals (miles)	5.1	5.2	6.6	6.4	5.5	5.2
Biological Resources						
Individual Species (acres)	1,455	1,142	3,883	3,499	2,909	2,580
Critical Habitat (acres)	Arroyo Toad: 7.4	Arroyo Toad: 7.4	Arroyo Toad: 15.7 Santa Ana Sucker: 74.6 Southwestern Willow Flycatcher: 87.5	Arroyo Toad: 15.7 Santa Ana Sucker: 74.6 Southwestern Willow Flycatcher: 87.5	0	0
Noise & Vibration (Number of types of sensitive receptors within 2,500 feet from the alignment centerline)						
Residential	6,609	6,598	6,287	6,071	5,727	5,708
Animal Kennels	0	0	2	2	0	0
Churches	14	14	16	16	16	16
Clubs/Lodge Halls	2	2	1	1	1	1
Day Care Facilities	0	0	1	1	1	1
Hospitals	1	1	0	0	0	0
Hotels	0	0	4	4	4	4
Libraries	1	1	1	1	1	1
Parks	5	5	9	8	9	9
Schools	8	8	18	15	18	18
Studios	0	0	10	7	9	9

⁴ These potential impacts to aquatic resources in this table assume that tunneling methods in areas of significant groundwater, where surface aquatic resources are supported by that groundwater, will avoid material groundwater table lowering.

Table 2.3-2 East Corridor – Summary of Non-Tunnel (Surface and Aerial) Evaluation Measurement Criteria³

Measurement Criteria	E1a	E1b	E2a	E2b	E3a	E3b
Schools						
Number of Schools within 1,500 feet ⁵ <i>(on either side of centerlines)</i>	7	7	7	5	7	7
Communities & Environmental Justice						
Residential and Business Easements/Displacement <i>(No. of parcels within 100 feet on either side of alignment centerline)</i>	Residential 0 multi-family 16 single-family Business 77 commercial 107 industrial	Residential 0 multi-family 16 single-family Business 80 commercial 106 industrial	Residential 1 multi-family 62 single-family Business 104 commercial 66 industrial	Residential 1 multi-family 53 single-family Business 93 commercial 65 industrial	Residential 26 multi-family 92 single-family Business 91 commercial 77 industrial	Residential 26 multi-family 93 single-family Business 94 commercial 76 industrial
Number of Census Tracts (CTs) <i>(Within ½ mile of alignment centerline)</i>	20 CTs/ 44 Total CTs	20 CTs/ 44 Total CTs	21 CTs/ 32 Total CTs	21 CTs/ 32 Total CTs	21 CTs/ 27 Total CTs	21 CTs/ 27 Total CTs

⁵ This is consistent with, and exceeds the Public Resources Code Section 21151.4, which aims to reduce impacts from projects within one-fourth of a mile of a school that are associated with emitting hazardous air emissions, or that would handle an extremely hazardous substance or a mixture containing extremely hazardous substances.

Table 2.3-2 East Corridor – Summary of Non-Tunnel (Surface and Aerial) Evaluation Measurement Criteria³

Measurement Criteria	E1a	E1b	E2a	E2b	E3a	E3b
Demographics & Socioeconomic Composition <i>(Percentages are Los Angeles County average for that metric)</i>	11 CTs ≥ 71% minority 10 CTs ≥ 11% Elderly Pop 0 CTs ≥ 27% LEP 11 CTs ≥ 16% Poverty	11 CTs ≥ 71% minority 10 CTs ≥ 11% Elderly Pop 0 CTs ≥ 27% LEP 11 CTs ≥ 16% Poverty	9 CTs ≥ 71% Minority 12 CTs ≥ 11% Elderly Pop 0 CTs ≥ 27% LEP 11 CTs ≥ 16% Poverty	9 CTs ≥ 71% Minority 12 CTs ≥ 11% Elderly Pop 0 CTs ≥ 27% LEP 11 CTs ≥ 16% Poverty	9 CTs ≥ 71% Minority 12 CTs ≥ 11% Elderly Pop 0 CTs ≥ 27% LEP 11 CTs ≥ 16% Poverty	9 CTs ≥ 71% Minority 12 CTs ≥ 11% Elderly Pop 0 CTs ≥ 27% LEP 11 CTs ≥ 16% Poverty
Note: CT(s) = Census Tract(s) Source: HMM/URS/Arup Joint Venture, 2015.						

Angeles National Forest Management Plan

The proposed alignment alternatives would traverse under the Angeles National Forest in tunnel for between 12 and 18 miles. The USFS has a Land Management Plan for the Angeles National Forest that identifies land use zones. These uses range from Developed Areas Interface to Back Country to Critical Biological areas. Additionally, a portion of the forest land was designated as a National Monument in October 2014. Federal agencies have stated that the designation as a National Monument does not preclude the Authority from evaluating and studying a potential high-speed rail alignment in the area. The proposed alignments would be evaluated to ensure that conflicts with the identified land uses and National Monument are avoided. The future environmental documents will conduct a detailed analysis on the consistency of alignments alternatives with the Angeles National Forest Land Management Plan and National Monument.

2.3.3.3 Long Tunnel Design and Constructability Considerations for East Corridor Alignment Alternatives

Ground Conditions

The feasibility of constructing long tunnels depends on multiple factors such as gradient, tunnel diameter, and ground-conditions. Given the geologic history of the San Gabriel Mountains, the long tunnels beneath the San Gabriel Mountains would likely be constructed by boring from multiple headings. Using multiple headings could reduce the length of single drives by individual tunnel boring machines.

Fault Crossings

The HSR design criteria require that the tunnel lining at “potentially hazardous” and “hazardous” active fault crossings be designed to a No Collapse Performance Level (NCL). In addition, crossings of “potentially hazardous” and “hazardous” faults are to be designed to allow realignment of the tracks following rupture. The East Corridor alignments cross multiple fault strands. Concepts for developing structures that meet the NCL criteria could include constructing a fault chamber backfilled with compressible material prior to boring the tunnel through a fault zone and using an oversized bored tunnel to enable realignment in the event of a rupture. This and other techniques would be explored during preliminary engineering.

Long Tunnel Operational Constraints

The tunnel concepts require continuous operating tunnels between the northern edge of the San Gabriel Mountains to the proposed Burbank Airport Station. Operational issues to consider include but are not limited to: Ventilation, Traction Power, and Fire and Life Safety. Methods of ventilation that are considered to be feasible for an alternative could include the use of enlarged diameter tunnels with provision for additional air capacity, among other potential solutions. Providing traction power for longer operating tunnels may require additional access for traction power facilities and underground facilities, which would be determined during preliminary engineering. Fire and Life Safety concepts would be based on requirements of the National Fire Protection Association and Fire and Life Safety would be developed with the State Fire Marshall.

2.3.3.4 E1a Alignment Alternative

The E1a alternative would have the second longest overall length (41.5 miles), the second shortest overall length of tunnel (20.2 miles), and the longest single-tunnel (same as E1b) length (13.7 miles). It would have 1.5 miles of tunnel within an active fault zone. E1a would have the most highway grade separations (10), and would cause disruption to existing railroads as it would realign existing Metrolink tracks in the City of Palmdale and share Metrolink ROW in the San Fernando Valley corridor from approximately Branford Street to the City of Burbank. Existing railroad ROW would also be utilized and tracks would be realigned through the City of Burbank.

The non-tunnel sections of the E1a alternative would potentially impact the following habitat: Arroyo Toad (7.4 acres) and 10.7 total acres of aquatic resources.

This alignment alternative would have 7.1 miles of alignment within a ½-mile of a City of Los Angeles designated methane hazard zone, and the most landfills within ¼ mile of the alignment (7), the same as E1b.

It would have the second fewest (same as E1b) total residential displacements and easements (267) and the second most commercial and industrial displacements and easements (276). The alternative would have the most schools (same as E1b) located within a ¼-mile of the alignment (15), and the most residences within 2,500 feet of centerline that could be affected by noise (6,609).

The E1a alternative would be approximately 38 percent visible and would have a medium potential for impacts to visual character due the percentage that would be visible.

Because of the low amount of potential impacts to aquatic resources, critical habitat, and special-status wildlife, this alternative **is carried forward for further consideration**.

2.3.3.5 E1b Alignment Alternative

The E1b alternative would have the longest overall length (41.9 miles), second longest overall length of tunnel (22.0 miles), and the longest (same as E1a) single long-tunnel length (13.7 miles). It would have 1.5 miles of tunnel within an active fault zone. E1b would have medium highway grade separations (8), and would have similar disruption to existing railroads as E1a.

The non-tunnel sections of the E1b alternative would potentially impact the following habitat: Arroyo Toad (7.4 acres) and 12.7 total acres of aquatic resources.

This alignment alternative would have 6.5 miles of alignment within a ½-mile of a City of Los Angeles designated methane hazard zone, and the most landfills within ¼ mile of the alignment (7), the same as E1a.

It would have the second fewest (same as E1a) total residential displacements and easements (267) and the most commercial and industrial displacements and easements (278). The alternative would have the most schools (same as E1a) located within a ¼-mile of the alignment (15), and the second most residences within 2,500 feet of centerline that could be affected by noise (6,598).

The E1b alternative would be approximately 35 percent visible, meaning that 35 percent of the alternative would be at, or above ground level, and would have a medium potential for impacts to visual character due the percentage that would be visible.

Because of the low amount of potential impacts to aquatic resources, critical habitat, and special-status wildlife, this alternative **is carried forward for further consideration**.

2.3.3.6 E2a Alignment Alternative

The E2a alternative would have the second shortest overall length (37.7 miles), the shortest overall length of tunnel (19.5 miles), and the shortest (same as E2b) single long-tunnel length (12.3 miles). It would have 1.1 miles (same as E2b) of tunnel within an active fault zone. E2a would have the least (same as E2b and E3a) highway grade separations (7), and would cause disruption to existing railroads as the existing Metrolink tracks in the City of Palmdale would be realigned.

The non-tunnel sections of the E2a alternative would potentially impact the following habitat: Arroyo Toad (15.7 acres), Santa Ana Sucker (74.6 acres), and Southwestern Willow Flycatcher (87.5 acres). The E2a alternative would potentially impact 10 total acres of aquatic resources while not in tunnel.

This alignment alternative would have 1.9 miles of alignment within a ½-mile of a City of Los Angeles designated methane hazard zone (the third fewest), and the fewest (same as E2b) landfills within ¼ mile (3).

It would have the most residential displacements and easements (329) and medium commercial and industrial displacements and easements (191). The alternative would have medium (same as E3a) schools located within a ¼-mile of the alignment (9), and medium residences within 2,500 feet of centerline that could be affected by noise (6,287).

The E2a alternative would be approximately 43 percent visible. It would have the same alignment and track type as all of the East Corridor alignments in the vicinity of the City of Palmdale. E2a/b would be visible to residences of Lake View Terrace and have potential to be visible to residences and recreators at Hansen Dam Recreation Center and Orcas Park. E2a would have the largest proportion of visible track type in and around the Hansen Dam Recreation Center, and, therefore, has greater potential to contrast with existing visual character compared to all other alternatives that share similar track types through similar geographies.

Due to low potential for impacts to schools and noise sensitive receptors, as well as shortest overall tunnel length, shortest single long-tunnel length, and least highway grade separations, this alternative **is carried forward for further consideration.**

2.3.3.7 E2b Alignment Alternative

The E2b alternative would have medium overall length (38.2 miles), the third longest overall length of tunnel (21.3 miles), and shortest (same as E2a) single long-tunnel length (12.3 miles). It would have 1.1 miles of tunnel within an active fault zone. E2b would have the least (same as E2a and E3a) highway grade separations (7), and would cause similar disruption to existing railroads as Alternative E2a.

The non-tunnel sections of the E2b alternative would potentially impact the following habitat: Arroyo Toad (15.7 acres), Santa Ana Sucker (74.6 acres), and Southwestern Willow Flycatcher (87.5 acres). The E2b alternative would potentially impact 31.2 total acres of aquatic resources while not in tunnel.

This alignment alternative would have 3.3 miles of alignment within a ½-mile of a City of Los Angeles designated methane hazard zone (the third most), and the fewest (same as E2a) landfills within ¼ mile (3).

It would have the second most residential displacements and easements (315) and third fewest commercial and industrial displacements and easements (179). The alternative would have the fewest schools located within a ¼-mile of the alignment (7), and medium residences within 2,500 feet of centerline that could be affected by noise (6,071).

The E2b alternative would be approximately 39 percent visible. It would have the same alignment and track type as all of the East Corridor alignments in the vicinity of the City of Palmdale, but the alignment would be further east of E2a through the Community of Acton area. More of the alignment would be tunnel in this area as compared to E2a, thus contributing to the lower percentage of visible track than E2a. The visible track in the Community of Acton area travels through areas of similar existing visual character. The alignment joins the same profile and location as E2a before entering the Angeles National Forest. From this point on, the analysis is the same as alignment E2a.

Due to low potential for impacts to schools and noise sensitive receptors, as well as shortest single long-tunnel length and the least highway grade separations, this alternative **is carried forward for further consideration.**

2.3.3.8 E3a Alignment Alternative

The E3a alternative would have the shortest overall length (36.2 miles), medium overall length of tunnel (21.2 miles), and the second longest (same as E3b) single-tunnel length (13.3 miles). It would have 1.5 miles of tunnel within an active fault zone. E3a would have the least (same as E2a/b) highway grade separations (7), and would cause similar disruption to existing railroads as Alternative E2a.

The E3a alternative would have no potential impacts to critical habitat while not in tunnel. The E3a alternative would potentially impact 9.6 total acres of aquatic resources while not in tunnel.

This alignment alternative would have 0 miles of alignment within a ½-mile of a City of Los Angeles designated methane hazard zone (the least), and four landfills within ¼ mile (medium, same as E3b).

It would have the fewest (same as E3b) residential displacements and easements (224) and 172 commercial and industrial displacements and easements. The alternative would have medium (same as E2a) schools located within a ¼-mile of the alignment (9), and the second fewest residences within 2,500 feet of centerline that could be affected by noise (5,727).

The E3a alternative would be approximately 34 percent visible. It would have the same alignment and track type as all of the East Corridor alignments in the vicinity of the City of Palmdale, up until approximately 0.2 miles south of Kentucky Springs Road when the E3a alignment is situated east from E1a and E2a as it enters the Angeles National Forest. E3a/b are not visible within the Angeles National Forest. E3a/b would continue to be tunneled until past the Burbank Station at North Buena Vista Street. Impacts to the visual character in this urbanized industrial area would be similar to those of E2a and E3b because both would traverse areas of shared similar visual character.

Due to low potential for impacts to aquatic resources, schools, and noise sensitive receptors, this alternative **is carried forward for further consideration.**

2.3.3.9 E3b Alignment Alternative

The E3b alternative would have the second shortest overall length (36.6 miles), the longest overall length of tunnel (23.0 miles), and the second longest (same as E3a) single-tunnel length (13.3 miles). It would have 1.5 miles of tunnel within an active fault zone. E3b would have the second most highway grade separations (9), and would cause similar disruption to existing railroads as Alternative E3a.

The E3b alternative would have no potential impacts to critical habitat while not in tunnel. The E3b alternative would potentially impact 9.2 total acres of aquatic resources while not in tunnel.

This alignment alternative would have 0.7 miles of alignment within a ½-mile of a City of Los Angeles designated methane hazard zone (the second fewest), and four landfills within ¼ mile (medium, same as E3a).

It would have the fewest (same as E3a) residential displacements and easements (224) and 174 commercial and industrial displacements and easements. The alternative would have the second fewest schools located within a ¼-mile of the alignment (8), and the fewest residences within 2,500 feet of centerline that could be affected by noise (5,708).

The E3b alternative would be approximately 30 percent visible. It would have the same alignment and track type as all of the East Corridor alignments in the vicinity of the City of Palmdale, up until where the alignment crosses East Barrel Springs Road. E3b would continue on the same track type, but laterally diverge from the other alternatives. E3b would be less visible in the vicinity of SR14 as it is further east than the other alternatives and is tunneled. As E3b enters the Angeles National Forest, it would be tunneled and run along a similar alignment to E3a. E3b is also not visible within the Angeles National Forest and has the least amount of total visible track (30 percent) compared to all other alternatives. Alignment E3b has the least probable potential for adverse impacts to existing visual character because it

has no visibility from within the Angeles National Forest or Tujunga Wash, and the least amount of total visible track.

Due to low potential for impacts to aquatic resources, schools, and noise sensitive receptors, this alternative **is carried forward for further consideration.**

2.3.4 Analysis of Burbank Airport Station Options

2.3.4.1 Station Option A

Station Option A would have zero residential, business, and industrial displacements. It would have zero schools within ¼-mile, and would have zero previously recorded archaeological sites within ½-mile. Station Option A would have 581 residences within 2,000 feet that would have a potential to be noise sensitive receptors. The 581 additional noise sensitive receptors, in relation to the SR14 Corridor alternatives and the E1a and E1b alternatives, represent a small percentage of the overall noise sensitive receptors for these alignment alternatives.

Regarding visual sensitive receptors, land use to the southwest includes industrial uses associated with the Bob Hope Airport. Land use to the east includes commercial/industrial buildings with residential areas located behind these buildings. San Fernando Boulevard separates the station platform location with these land uses. Therefore, visual sensitivity is expected to be low, since the residential area is behind the industrial area.

For these reasons, this station option **is carried forward for further consideration.**

2.3.4.2 Station Option B

Station Option B would have zero residential and commercial displacements. It would have one industrial displacement. It would have zero schools within ¼-mile, and would have zero previously recorded archaeological sites within ½-mile. Station Option B would have 106 residences within 2,000 feet that would have a potential to be noise sensitive receptors. In addition, Station Option B would be situated close to the Bob Hope Airport. As a result of its proximity to the airport, the station location would be further away from visual sensitive receptors and would likely have less potential impacts to visual character.

For these reasons, this station option **is carried forward for further consideration.**

2.3.4.3 Station Option C

Station Option C would have zero residential and commercial displacements. It would have four industrial displacements. It would have zero schools within ¼-mile, and would have four previously recorded archaeological sites within ½-mile. Station Option C would have 275 residences within 2,000 feet that would have a potential to be noise sensitive receptors. In addition, Station Option C would be situated close to the Bob Hope Airport. As a result of its proximity to the airport, the station location would be further away from visual sensitive receptors and would likely have less potential impacts to visual character.

For these reasons, this station option **is carried forward for further consideration.**

2.4 SR14 Corridor Alternatives

As mentioned in the Introduction, the 2014 SAA analyzed SR14 alternatives by geographic subsections (Palmdale, Santa Clarita, and San Fernando Valley subsections). Each of these subsections contained multiple alignment alternatives. This SAA combines those subsection alternatives into station-to-station alignments. The station-to-station alternatives consist of the following combinations:

- SR14-1: Palmdale Subsection Hybrid Alternative; Santa Clarita Subsection SCLT Alternative; and the San Fernando Valley Subsection SFW Alternative
- SR14-2: Palmdale Subsection Hybrid Alternative; Santa Clarita Subsection SCS Alternative; and San Fernando Valley SFW Alternative
- SR14-3: Palmdale Subsection East Alternative; Santa Clarita SCLT Alternative; and San Fernando Valley SFW Alternative
- SR14-4: Palmdale Subsection East Alternative; Santa Clarita SCS Alternative; and San Fernando Valley SFW Alternative

These SR14 alternatives can be seen in Figure 2.4-1 below.

2.4.1 Description of SR14 Alignment Alternatives

In the City of Palmdale, the SR14 alternatives would begin at-grade on the west side of Sierra Highway near Avenue O. The alternatives would run parallel and approximately 200 feet west of the existing railroad ROW and continue south at-grade before approaching the existing PTC. The alternatives would accommodate the proposed HSR station in the vicinity of Avenue Q, a ¼-mile south of the existing PTC. South of the PTC, the alternatives would continue at-grade and enter the existing 6th Street East ROW. The alternatives would remain in the 6th Street East ROW for approximately one mile before approaching Avenue R. South of Avenue R, the alternatives would continue through developed and undeveloped areas, crossing Sierra Highway at East Avenue S. South of Avenue S, the alternatives would continue east of Lake Palmdale and cross over Una Lake. Near Una Lake and Lake Palmdale, the HSR would enter the San Andreas Fault Zone. The crossing of this fault must be essentially “at-grade,” i.e. on low embankment, in shallow cut, or at-grade. Until this point, all SR14 alternatives are identical.

2.4.1.1 SR14-1 Alignment Alternative (Hybrid/SCLT/SFW)

Continuing from Una Lake, the alternative travels south into unincorporated County of Los Angeles at-grade for approximately one mile before tunneling under the California Aqueduct. The tunnel would continue in a southwest direction through primarily undeveloped land for approximately 7.25 miles before daylighting east of Red Rover Mine Road. The alternative would continue west at-grade and on a viaduct crossing over Sierra Highway and SR14. The alternative would enter an approximately 3.25 mile tunnel traveling southwest and daylighting east of Big Springs Road. Continuing southwest from Big Springs Road, the alternative would travel either at-grade or on viaduct, passing over Agua Dulce Canyon Road. West of Agua Dulce Canyon Road, the alternative would enter an approximately 1.2 mile tunnel continuing southwest. Upon daylighting, the alternative would be at-grade and on a viaduct for approximately four miles. The existing railroad, Soledad Canyon Road, and Lang Station Road would all be grade separated.

Approximately 0.4 miles within the city limits of the City of Santa Clarita, the alternative would enter an 8.7 mile tunnel traveling south through the City of Santa Clarita and portions of unincorporated County of Los Angeles. The tunnel would daylight north of the I-210 Freeway and the alternative would be on a viaduct over the I-210 freeway, Foothill Boulevard, and Roxford Street. The alternative would continue south and enter the existing railroad ROW. Upon entering the existing railroad ROW, the alternative would continue for approximately 11 miles before entering the proposed Burbank Station. The alternative would provide grade separations where necessary.

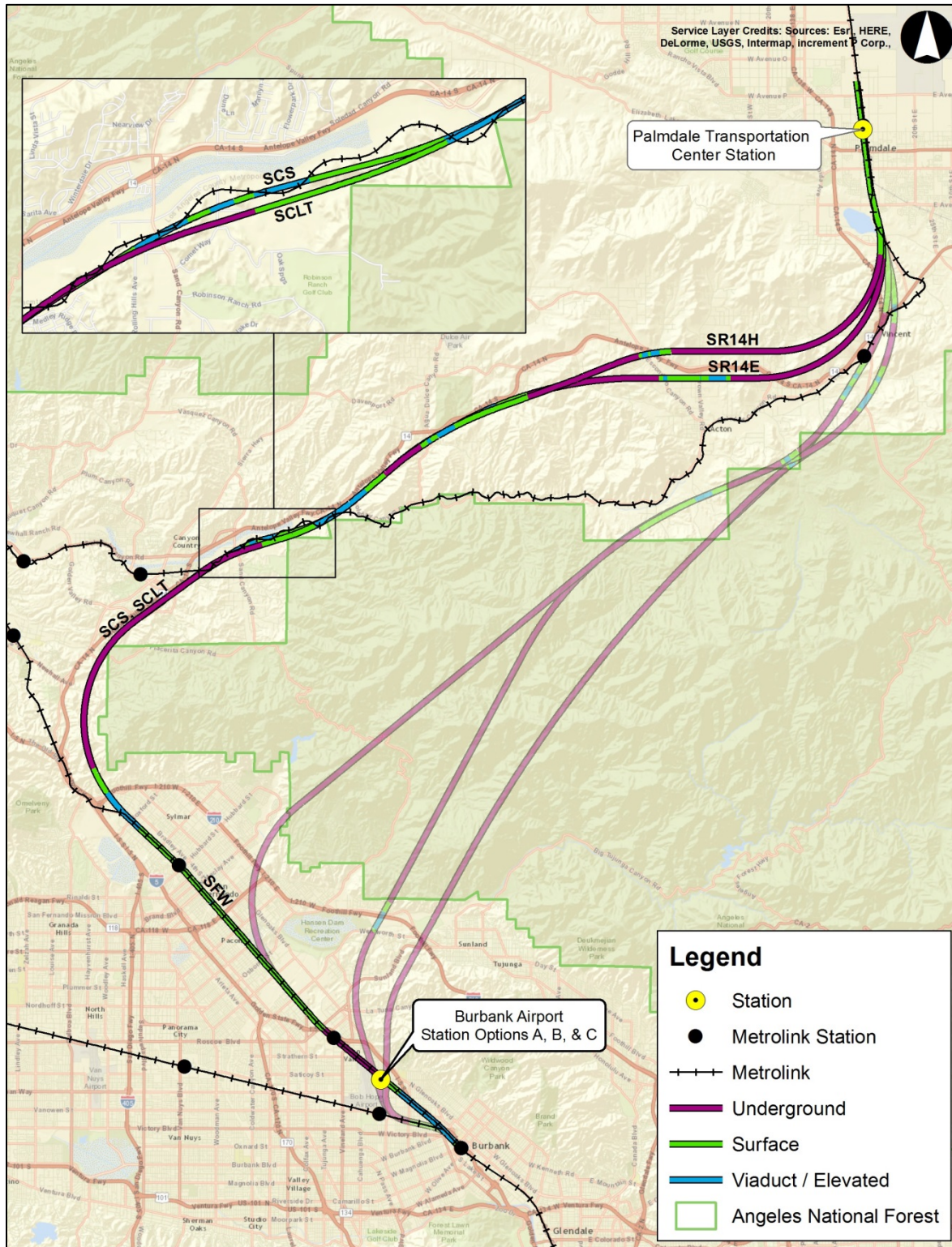


Figure 2.4-1
SR14 Alignment Alternatives and Station Options

2.4.1.2 SR14-2 Alignment Alternative (Hybrid/SCS/SFW)

Continuing from Una Lake, the alternative travels south into unincorporated County of Los Angeles at-grade for approximately one mile before tunneling under the California Aqueduct. The tunnel would continue in a southwest direction through primarily undeveloped land for approximately 7.25 miles before daylighting east of Red Rover Mine Road. The alternative would continue west at-grade and on viaduct crossing over Sierra Highway and SR14. The alternative would enter an approximately 3.25 mile tunnel traveling southwest and daylighting east of Big Springs Road. Continuing southwest from Big Springs Road, the alternative would travel either at-grade or on viaduct, passing over Agua Dulce Canyon Road. West of Agua Dulce Canyon Road, the alternative would enter an approximately 1.3 mile tunnel continuing southwest. Upon daylighting, the alternative would be at-grade and on viaduct for approximately 5.7 miles. The existing railroad, Soledad Canyon Road, and Lang Station Road would all be grade separated.

Approximately 2.1 miles within the city limits of the City of Santa Clarita, the alternative would enter a seven mile tunnel traveling south through the City of Santa Clarita and portions of unincorporated County of Los Angeles. The tunnel would daylight north of the I-210 Freeway and the alternative would be on a viaduct over the I-210 freeway, Foothill Boulevard, and Roxford Street. The alternative would continue south and enter the existing railroad ROW. Upon entering the existing railroad ROW, the alternative would continue for approximately 11 miles before entering the proposed Burbank Station. The alternative would provide grade separations where necessary.

2.4.1.3 SR14-3 Alignment Alternative (East/SCLT/SFW)

Continuing from Una Lake, the alternative would travel south into unincorporated County of Los Angeles at-grade for approximately one mile before tunneling under the California Aqueduct. The tunnel would continue in a southwest direction under SR14 and Sierra Highway through primarily undeveloped land for approximately six miles before daylighting approximately 400 feet east of Wisconsin Street. The alternative would continue west for approximately two miles through developed and undeveloped residential parcels, with Crown Valley and Escondido Canyon Roads being grade-separated. West of Escondido Canyon Road, the alternative would enter an approximately 3.7 mile tunnel traveling west by southwest and daylighting west of Big Springs Road. Continuing southwest from Big Springs Road, the alternative would parallel the south/east side of SR14 for approximately 3.25 miles either at-grade or on viaduct, passing over Agua Dulce Canyon Road. West of Agua Dulce Canyon Road, the alternative would enter an approximately 1.3 mile tunnel. Upon daylighting, the alternative would continue southwest at-grade and on viaduct for approximately four miles. The existing railroad, Soledad Canyon Road, and Lang Station Road would all be grade separated.

Approximately 0.4 miles within the city limits of the City of Santa Clarita, the alternative would enter an 8.7 mile tunnel traveling south through the City of Santa Clarita and portions of unincorporated County of Los Angeles. The tunnel would daylight north of the I-210 Freeway and the alternative would be on a viaduct over the I-210 freeway, Foothill Boulevard, and Roxford Street. The alternative would continue south and enter the existing railroad ROW. Upon entering the existing railroad ROW, the alternative would continue for approximately 11 miles before entering the proposed Burbank Station. The alternative would provide grade separations where necessary.

2.4.1.4 SR14-4 Alignment Alternative (East/SCS/SFW)

Continuing from Una Lake, the alternative travels south into unincorporated County of Los Angeles at-grade for approximately one mile before tunneling under the California Aqueduct. The tunnel would continue in a southwest direction under SR14 and Sierra Highway through primarily undeveloped land for approximately six miles before daylighting approximately 400 feet east of Wisconsin Street. The alternative would continue west for approximately two miles through developed and undeveloped residential parcels, with Crown Valley and Escondido Canyon Roads being grade-separated. West of Escondido Canyon Road, the alternative would enter an approximately 3.7 mile tunnel traveling west by

southwest and daylighting west of Big Springs Road. Continuing southwest from Big Springs Road, the alternative would parallel the south/east side of SR14 for approximately 3.25 miles either at-grade or on a viaduct, passing over Agua Dulce Canyon Road. West of Agua Dulce Canyon Road, the alternative would enter an approximately 1.3 mile tunnel. Upon daylighting, the alternative would continue southwest at-grade and on a viaduct for approximately 5.7 miles. The existing railroad, Soledad Canyon Road, and Lang Station Road would all be grade separated.

Approximately 2.1 miles within the city limits of the City of Santa Clarita, the alternative would enter a seven mile tunnel traveling south through the City of Santa Clarita and portions of unincorporated County of Los Angeles. The tunnel would daylight north of the I-210 Freeway and the alternative would be on a viaduct over the I-210 freeway, Foothill Boulevard, and Roxford Street. The alternative would continue south and enter the existing railroad ROW. Upon entering the existing railroad ROW, the alternative would continue for approximately 11 miles before entering the proposed Burbank Station. The alternative would provide grade separations where necessary.

2.4.2 Description of Burbank Airport Station Connections to SR14 Alternatives

As discussed in Section 2.3.2, the 2014 SAA identified the Burbank Airport Station alternative within the San Fernando Valley. Although this has not changed, the station platform location has shifted northwest within the existing railroad ROW (Station Option A) in order to improve connectivity to the Bob Hope Airport. Station Option A is compatible with any of the SR14 Corridor alternatives and East Corridor alternatives E1a/b. In addition, as part of the East Corridor Alternatives analysis, below ground Options B and C were introduced for compatibility with the E2a/b and E3a/b alignment alternatives, respectively. Table 2.4-1 shows the compatibility of SR14 Corridor Alternatives with the three Burbank Airport Station options.

Table 2.4-1 SR14 Alternative Station Configuration Compatibility

SR14 Alignment Alternative	Alignment Alternative Compatible With Burbank Airport Station		
	Option A	Option B	Option C
SR14-1	Yes	Yes	No
SR14-2	Yes	Yes	No
SR14-3	Yes	Yes	No
SR14-4	Yes	Yes	No
Source: HMM/URS/Arup Joint Venture, 2015.			

2.4.3 Evaluation of SR14 Alternatives

2.4.3.1 Overview

Table 2.4-2 consists of the non-tunnel measurement criteria that are primarily related to surface disruption. Table 1 in Appendix A provides all of the measurement criteria (including tunnel-related) used in the evaluation comparisons. A comparative evaluation of all Project Section alternatives will be presented in the draft environmental document.

Please note that the evaluation of the alignments generally following the SR14 Corridor compares only these alternatives between each other. The evaluation does not compare the SR14 Corridor alternatives to the East Corridor alternatives, which are analyzed in a separate section above.

Table 2.4-2 SR14 Corridor – Summary of Non-Tunnel (Surface and Aerial) Evaluation Measurement Criteria

Measurement Criteria	SR14-1 (Hybrid/SCN/SF W)	SR14-2 (Hybrid/SCS/SF W)	SR14-3 (East/SCN/SFW)	SR14-4 (East/SCS/SFW)
Section 4(f) and 6(f)				
Parklands <i>(Within 100 feet of the alignment centerline)</i>	3.3 acres 32 bike routes 1 trail	3.3 acres 32 bike routes 1 trail	3.3 acres 32 bike routes 1 trail	3.3 acres 32 bike routes 1 trail
Cultural Resources: Previously Recorded Archaeological Sites <i>(Within the archaeology study area inclusive of alignment centerline plus 100-foot buffer)</i>	9 Of these, 1 may be considered a significant Archaeological Site.	7 Of these, 1 may be considered a significant Archaeological Site.	9 Of these, 1 may be considered a significant Archaeological Site.	6 Of these, 1 may be considered a significant Archaeological Site.
Cultural Resources: Significant Historic Architectural Sites <i>(Within historic architecture study area inclusive of alignment centerline plus 100-foot buffer)</i>	7	5	5	5
Aquatic Resources⁶				
Wetland Habitats, Lakes, Ponds, Rivers, Reservoirs (acres)	16.6	16.6	16.9	16.9
Streams, Creeks, or Canals (miles)	7.4	7.8	7.5	7.8
Biological Resources				
Individual Species	6,730	7,127	7,026	7,423
Critical Habitat (acres)	Arroyo Toad: 77.5 Coastal California Gnatcatcher: 20.8	Arroyo Toad: 78.2 Coastal California Gnatcatcher: 20.8	Arroyo Toad: 77.5 Coastal California Gnatcatcher: 20.8	Arroyo Toad: 78.2 Coastal California Gnatcatcher: 20.8
Noise & Vibration (Number of types of sensitive receptors within 2,500 feet from the alignment centerline)				
Residential	19,334	20,439	19,570	20,675
Animal Kennels	1	1	1	1
Churches	48	51	48	51
Clubs/Lodge Halls	12	12	12	12
Day Care Facilities	5	5	5	5
Hospitals	2	2	2	2
Hotels	9	9	9	9
Libraries	2	2	2	2
Parks	25	25	25	25
Schools	47	49	48	50

⁶ These potential impacts to aquatic resources in this table assume that tunneling methods in any areas of significant groundwater, where surface aquatic resources are supported by that groundwater, will avoid material groundwater table lowering.

Table 2.4-2 SR14 Corridor – Summary of Non-Tunnel (Surface and Aerial) Evaluation Measurement Criteria

Measurement Criteria	SR14-1 (Hybrid/SCN/SF W)	SR14-2 (Hybrid/SCS/SF W)	SR14-3 (East/SCN/SFW)	SR14-4 (East/SCS/SFW)
Studios	10	10	10	10
Schools				
Number of Schools within 1,500 feet <i>(on either side of centerlines)</i>	17	19	17	19
Communities & Environmental Justice				
Residential and Business Easements/ Displacement <i>(No. of parcels within 100 feet on either side of alignment centerline)</i>	Residential 3 multi-family 48 single-family Business 254 commercial 240 industrial	Residential 3 multi-family 59 single-family Business 255 commercial 240 industrial	Residential 3 multi-family 34 single-family Business 254 commercial 239 industrial	Residential 3 multi-family 45 single-family Business 255 commercial 240 industrial
Number of Census Tracts (CTs) <i>(Within ½ mile of alignment centerline)</i>	54 CTs/ 59 Total CTs	54 CTs/ 59 Total CTs	54 CTs/ 59 Total CTs	54 CTs/ 59 Total CTs
Demographics & Socioeconomic Composition <i>(Percentages are Los Angeles County average for that metric)</i>	39 CTs ≥ 71% Minority 14 CTs ≥ 11% Elderly Pop 10 CTs ≥ 27% LEP 33 CTs ≥ 16% Poverty	39 CTs ≥ 71% Minority 14 CTs ≥ 11% Elderly Pop 10 CTs ≥ 27% LEP 33 CTs ≥ 16% Poverty	39 CTs ≥ 71% Minority 14 CTs ≥ 11% Elderly Pop 10 CTs ≥ 27% LEP 33 CTs ≥ 16% Poverty	39 CTs ≥ 71% Minority 14 CTs ≥ 11% Elderly Pop 10 CTs ≥ 27% LEP 33 CTs ≥ 16% Poverty
Note: CT(s) = Census Tract(s) Source: HMM/URS/Arup Joint Venture, 2015.				

2.4.3.2 Resources of Significance to SR14 Corridor Alignment Alternatives

Groundwater Resources

The proposed alignment alternatives would traverse areas near the Angeles National Forest that are known to have significant groundwater resources, including public and private wells, naturally occurring springs and seeps, and drinking water aquifers. Impacts to these resources may be a significant challenge to construction wherever alignments would involve tunneling at or below the known water table level. Construction methods and engineering techniques would need to be developed to minimize or avoid groundwater loss and impacts to aquifers, where present. This could have direct subterranean impacts along with indirect impacts to surface aquatic resources, which in some locations may serve as suitable habitats for threatened or endangered species. The information gathered and used in this SAA is intended to identify these potential issues and risks associated with impacts to groundwater resources for future detailed evaluation. The environmental documents that will follow this SAA will provide substantial

technical detail regarding the evaluation of groundwater resources within the project footprint as well as potential direct impacts to groundwater resources, such as wells and aquifers, and indirect impacts to surface aquatic resources that are potentially linked to groundwater resources at depth.

Cultural Resources

For cultural resources, a desktop level of analysis is widely acceptable for the AA evaluation. As part of the effort to coordinate with the USFS, a preliminary field survey was conducted in and adjacent to the Angeles National Forest in February 2015. The primary purpose of this cultural field survey was to identify areas where subsequent targeted surveys may yield important cultural resources information, which would inform the alternative selection and refinement process in future environmental documents.

Angeles National Forest Management Plan

The SR14 alternatives pass near the Angeles National Forest in the Santa Clarita area, and have potential to impact land uses within the Forest. The USFS has a Land Management Plan for the Angeles National Forest that identifies land use zones. These uses range from Developed Areas Interface to Back Country to Critical Biological areas. Additionally, a portion of the forest land was designated as a National Monument in October 2014. Federal agencies have stated that the designation as a National Monument does not preclude the Authority from evaluating and studying a potential high-speed rail alignment in the area. The proposed alignments would be evaluated to ensure that conflicts with the identified land uses and the National Monument are avoided. The future environmental documents will conduct a detailed analysis on the consistency of alignments alternatives with the Angeles National Forest Land Management Plan and National Monument.

2.4.3.3 Long Tunnel Design and Constructability Considerations for SR14 Alignment Alternatives

Ground Conditions

The feasibility of constructing long tunnels depends on multiple factors such as gradient, tunnel diameter, and ground-conditions. Given the geologic history of the San Gabriel Mountains, long tunnels near the San Gabriel Mountains would likely be constructed by boring from multiple headings. Using multiple headings could reduce the length of single drives by individual tunnel boring machines.

Fault Crossings

The HSR design criteria require that the tunnel lining at “potentially hazardous” and “hazardous” active fault crossings be designed to a No Collapse Performance Level (NCL). In addition, crossings of “potentially hazardous” and “hazardous” faults are to be designed to allow realignment of the tracks following rupture. The East Corridor alignments cross multiple fault strands. Concepts for developing structures that meet the NCL criteria could include constructing a fault chamber backfilled with compressible material prior to boring the tunnel through a fault zone and using an oversized bored tunnel to enable realignment in the event of a rupture. This and other techniques would be explored during preliminary engineering.

Long Tunnel Operational Constraints

The tunnel concepts require continuous operating tunnels along portions of the alternatives. Operational issues to consider include but are not limited to: Ventilation, Traction Power, and Fire and Life Safety. Methods of ventilation that are considered to be feasible for an alternative could include the use of enlarged diameter tunnels with provision for additional air capacity, among other potential solutions. Providing traction power for longer operating tunnels may require additional access for traction power facilities and underground facilities, which would be determined during preliminary engineering. Fire and

Life Safety concepts would be based on requirements of the National Fire Protection Association and Fire and Life Safety would be developed with the State Fire Marshall.

2.4.3.4 SR14-1 Alignment Alternative

The SR14-1 alternative would have the second shortest overall length (49.0 miles), the longest overall length of tunnel (20.7 miles), and the longest (same as SR14-3) single-tunnel length (8.9 miles). It would have 1.3 miles of tunnel within an active fault zone. SR14-1 would have the same amount of highway grade separations (13) as all SR14 alternatives, and would cause disruption to existing railroads as it would realign existing Metrolink tracks in the City of Palmdale around Una Lake area, shares Metrolink ROW in the San Fernando Valley corridor from the Community of Sylmar to the City of Burbank, and utilizes and realigns existing railroad ROW through the City of Burbank.

The SR14-1 alternative would potentially impact the following habitat: Arroyo Toad (77.5 acres) and Coastal California Gnatcatcher (20.8 acres) while not in tunnel. The SR14-1 alternative would potentially impact 16.6 total acres of aquatic resources while not in tunnel.

This alignment alternative would have 6.85 miles of alignment within a ½-mile of a City of Los Angeles designated methane hazard zone (the same as all SR14 alignment alternatives), and 12 landfills within ¼ mile (the same as all SR14 alignment alternatives).

It would have the most residential displacements and easements (157) and the most commercial and industrial displacements and easements (537). This alternative would have the fewest (same as SR14-2) schools located within a ¼-mile of the alignment (20), and the fewest residences within 2,500 feet of centerline that could be affected by noise (19,334).

The SR14-1 alternative would be approximately 57 percent visible. It would have the same alignment and track type as SR14-3 in the vicinity of the Robinson Ranch Golf Club. Just northeast of Agua Dulce Road, SR14-1 and SR14-2 would have approximately 0.5 mile more track on viaduct than SR14-3 and SR14-4 (but overall SR14-1 would have the least amount of visible track). SR14-1 would have the least potential for impacts to visual resources because it would have the least amount of visible track, and also have the least visibility from Robinson Ranch Golf Club, travelers on SR14, and the Community of Acton.

Due to low potential for impacts schools, and noise sensitive receptors, this alternative is **carried forward for further consideration**.

2.4.3.5 SR14-2 Alignment Alternative

The SR14-2 alternative would have the shortest overall length (48.9 miles), the second shortest overall length of tunnel (18.9 miles), and the second shortest single-tunnel length (7.2 miles). It would have 1.3 miles of tunnel within an active fault zone. SR14-2 would have the same amount of highway grade separations (13) as all SR14 alternatives, and would cause similar disruption to existing railroads as SR14-1. Additional Metrolink realignments would also be required in the City of Santa Clarita.

The SR14-2 alternative would potentially impact the following habitat: Arroyo Toad (78.2 acres) and Coastal California Gnatcatcher (20.8 acres) while not in tunnel. The SR14-2 alternative would potentially impact 16.6 total acres of aquatic resources while not in tunnel.

This alignment alternative would have 6.85 miles of alignment within a ½-mile of a City of Los Angeles designated methane hazard zone (the same as all SR14 alignment alternatives), and 12 landfills within ¼ mile (the same as all SR14 alignment alternatives).

It would have the second most residential displacements and easements (148) and the fewest commercial and industrial displacements and easements (532). This alternative would have the fewest (same as SR14-1) schools located within a ¼-mile of the alignment (20), and the second most residences within 2,500 feet of centerline that could be affected by noise (20,439).

The SR14-2 alternative would be approximately 61 percent visible. It would have the same alignment and track type as SR14-1 except in the vicinity of the Robinson Ranch Golf Club. SR14-2 and SR14-4 would have similar alignments and track type in this area, which would have more track on viaduct than SR14-1 and SR14-3. Potential impacts to the visual character in the vicinity of the Community of Acton would be less than SR14-2 and SR14-4. SR14-2 would have more visible track than SR14-3, however, SR14-3 would be more visible by SR14 travelers and the Community of Acton.

Due to low potential for impacts to aquatic resources and schools, this alternative is **carried forward for further consideration**.

2.4.3.6 SR14-3 Alignment Alternative

The SR14-3 alternative would have the longest overall length (49.4 miles), the second longest overall length of tunnel (20.0 miles), and the longest (same as SR14-1) single-tunnel length (8.9 miles). It would have 1.8 miles of tunnel within an active fault zone. SR14-3 would have the same amount of highway grade separations (13) as all SR14 alternatives, and would cause similar disruption to existing railroads as SR14-1.

The SR14-3 alternative would potentially impact the following habitat: Arroyo Toad (77.5 acres) and Coastal California Gnatcatcher (20.8 acres) while not in tunnel. The SR14-3 alternative would potentially impact 16.9 total acres of aquatic resources when not in tunnel.

This alignment alternative would have 6.85 miles of alignment within a ½-mile of a City of Los Angeles designated methane hazard zone (the same as all SR14 alignment alternatives), and 12 landfills within ¼ mile (the same as all SR14 alignment alternatives).

It would have the fewest residential displacements and easements (127) and medium (same as SR14-4) commercial and industrial displacements and easements (533). This alternative would have the most (same as SR14-4) schools located within a ¼-mile of the alignment (21), in particular, passing closely to the Vasquez High School and the High Desert Middle School in the Community of Acton while not in tunnel. It is notable that the potential impacts to the High Desert Middle School are potentially significant because the school serves a variety of functions for the small, rural Community of Action. Additionally, this school functions as a community center and is the only public middle school in the surrounding area.

The alternative would have the second fewest residences within 2,500 feet of centerline that could be affected by noise (19,570).

The SR14-3 alternative would be approximately 60 percent visible. This alternative is slightly closer than SR14-2 and SR14-4 to the Robinson Ranch Golf Club and residential area to the west of the golf club. However, the difference is minimal (approximately 0.1 miles). Where the alignment alternatives diverge near the Community of Acton, SR14-3 would have more visible track and is closer to the Community of Acton than SR14-1 and SR14-2. The surrounding landscape is rural and residential. SR14-2 would have more visible track than SR14-3; however, SR14-3 would be more visible by SR14 travelers and the Community of Acton.

For the reasons of the potential impacts and the function of schools in the Community of Acton area, **this alternative is withdrawn from further consideration**.

2.4.3.7 SR14-4 Alignment Alternative

The SR14-4 alternative would have the second longest overall length (49.3 miles), the shortest overall length of tunnel (18.2 miles), and the shortest single-tunnel length (7.0 miles). It would have 1.3 miles of tunnel within an active fault zone. SR14-4 would have the same amount of highway grade separations (13) as all SR14 alternatives, and would cause similar disruption to existing railroads as SR14-2.

The SR14-4 alternative would potentially impact the following habitat: Arroyo Toad (78.2 acres) and Coastal California Gnatcatcher (20.8 acres) while not in tunnel. The SR14-4 alternative would potentially impact 16.9 total acres of aquatic resources when not in tunnel.

This alignment alternative would have 6.85 miles of alignment within a ½-mile of a City of Los Angeles designated methane hazard zone (the same as all SR14 alignment alternatives), and 12 landfills within ¼ mile (the same as all SR14 alignment alternatives).

It would have the second fewest residential displacements and easements (129) and the most (same as SR14-3) commercial and industrial displacements and easements (533). This alternative would have the most (same as SR14-3) schools located within a ¼-mile of the alignment (21), in particular, passing closely to the Vasquez High School and the High Desert Middle School in the Community of Acton while not in tunnel. It is notable that the potential impacts to the High Desert Middle School are potentially significant because the school serves a variety of functions for the small, rural Community of Action. Additionally, this school functions as a community center and is the only public middle school in the surrounding area.

This alternative would have the most residences within 2,500 feet of centerline that could be affected by noise (20,675).

The SR14-4 alternative would be approximately 63 percent visible. SR14-4 would have more track on viaduct near the Robinson Ranch Golf Club than SR14-1 and SR14-3, making it more likely to be visible from the golf course. SR14-4 would have the highest potential for impacts to visual resources because it has the highest percentage of visible track and also would likely be more visible from the Robinson Ranch Golf Club, travelers along SR14, and the Community of Acton.

For the reasons the potential impacts and the function of schools in the Community of Acton area, **this alternative is withdrawn from further consideration.**

3 Recommendation

Based on the 2010 PAA, 2011 SAA, 2012 SAA, the 2014 SAA, and this SAA, the alignment alternatives and station options either withdrawn from further consideration or identified for further evaluation in the Palmdale to Burbank Project-level environmental clearance process are listed below and summarized in Table 3.1-1. Alternatives carried forward for further consideration are shown in Figure 3.1-1. A comparative evaluation of all alternatives carried forward will be conducted and prepared as part of the draft environmental document that will be circulated for public review and comment.

Alignment Alternatives

- SR14-1 (Hybrid/SCLT/SFW) – carried forward
- SR14-2 (Hybrid/SCS/SFW) – carried forward
- SR14-3 (East/SCLT/SFW) – withdrawn
- SR14-4 (East/SCS/SFW) – withdrawn
- E1a – carried forward
- E1b – carried forward
- E2a – carried forward
- E2b – carried forward
- E3a – carried forward
- E3b – carried forward

Station Options

- Palmdale Transportation Center – carried forward
- Burbank Airport Station Option A – carried forward
- Burbank Airport Station Option B – carried forward
- Burbank Airport Station Option C – carried forward

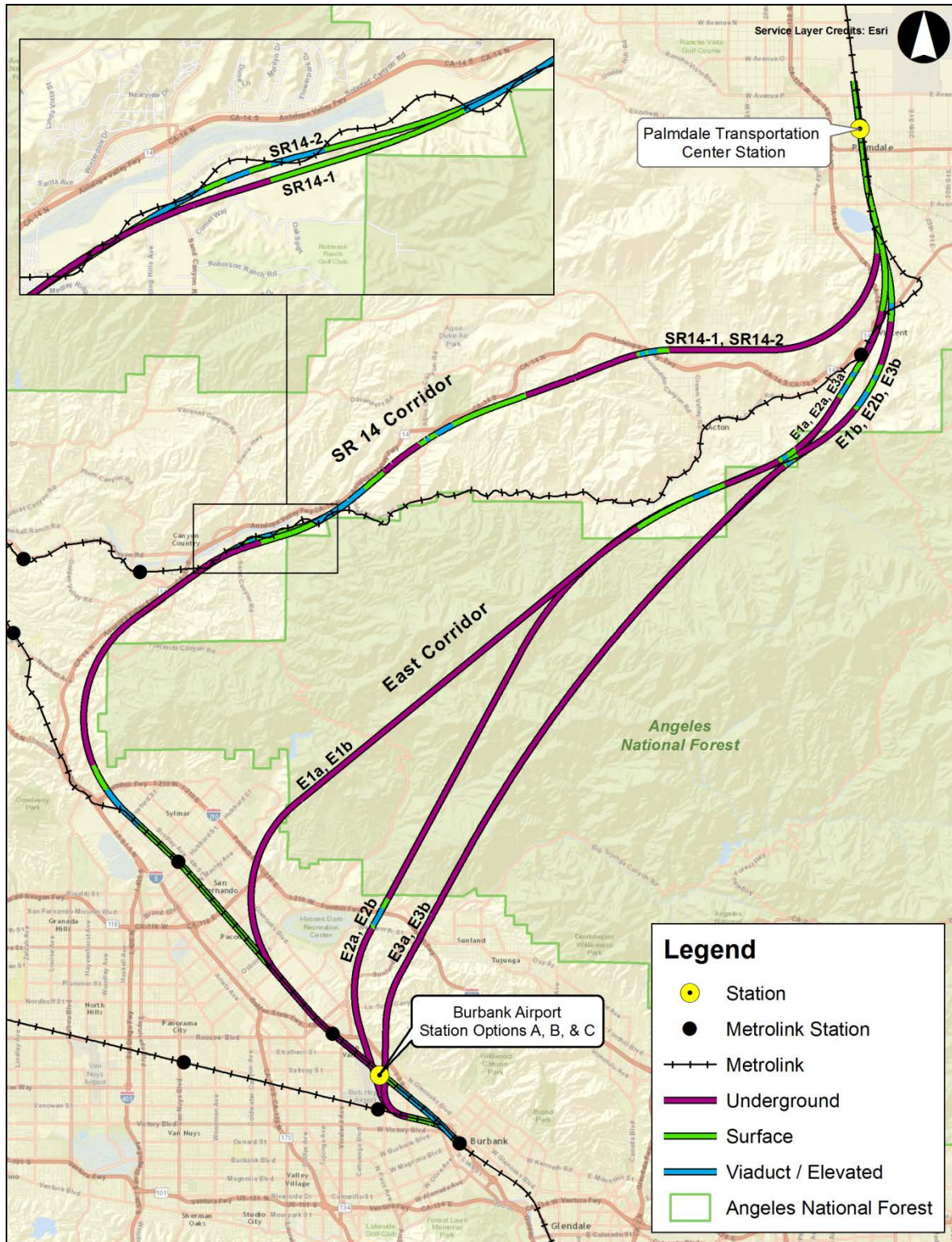


Figure 3.1-1
Alignment Alternatives and Station Options Carried Forward

Table 3.1-1 Alternatives Evaluation Summary

ALIGNMENT ALTERNATIVES AND STATION OPTIONS	AA DECISION		REASONS FOR ELIMINATION ¹						ADDITIONAL OBSERVATIONS/COMMENTS
	Carried Forward	Withdrawn	Construction ²	Incompatibility ³	Right-of-Way ⁴	Connectivity/ Accessibility ⁵	Community Impact ⁶	Environment ⁷	
SR14 Alignments									
SR14-1	X								Low potential for impacts schools and noise sensitive receptors
SR14-2	X								Low potential for impacts to aquatic resources and schools
SR14-3		X					P		Potential impacts to schools, and their community function, in the Acton area
SR14-4		X					P		Potential impacts to schools, and their community function, in the Acton area
East Corridor Alignments									
E1a	X								Low potential impacts to aquatic resources, critical habitat, and special-status wildlife
E1b	X								Low potential impacts to aquatic resources, critical habitat, and special-status wildlife
E2a	X								Low potential for impacts to aquatic resources, schools, and noise sensitive receptors
E2b	X								Low potential for impacts to schools and noise sensitive receptors

ALIGNMENT ALTERNATIVES AND STATION OPTIONS	AA DECISION		REASONS FOR ELIMINATION ¹						ADDITIONAL OBSERVATIONS/COMMENTS
	Carried Forward	Withdrawn	Construction ²	Incompatibility ³	Right-of-Way ⁴	Connectivity/ Accessibility ⁵	Community Impact ⁶	Environment ⁷	
E3a	X								Low potential for impacts to aquatic resources, schools, and noise sensitive receptors
E3b	X								Low potential for impacts to aquatic resources, schools, and noise sensitive receptors
Station Options									
Palmdale Transportation Center	X								Would provide connectivity to Metrolink and High Desert Corridor project
Burbank Airport Station Option A	X								Being located near the Bob Hope Airport and commercial and industrial development, there is low potential for community and environmental impacts.
Burbank Airport Station Option B	X								Being located near the Bob Hope Airport and commercial and industrial development, there is low potential for community and environmental impacts.
Burbank Airport Station Option C	X								Being located near the Bob Hope Airport and commercial and industrial development, there is low potential for community and environmental impacts.

ALIGNMENT ALTERNATIVES AND STATION OPTIONS	AA DECISION		REASONS FOR ELIMINATION ¹					ADDITIONAL OBSERVATIONS/COMMENTS
	Carried Forward	Withdrawn	Construction ²	Incompatibility ³	Right-of-Way ⁴	Connectivity/ Accessibility ⁵	Community Impact ⁶	

Notes:
1 = Reasons for Elimination: Primary (P) and secondary (S) reasons for elimination.
2 = Construction: Construction of the alternative is undesirable in terms of engineering challenges, assessed using the methodology set out in section 1.7.
3 = Incompatibility: The alternative is not consistent with existing adopted local, regional, and state plans, or is not supported by existing or future growth areas, assessed using the methodology set out in Section 1.7.
4 = ROW: The alternative does not minimize ROW acquisitions, or construction of the alternative is undesirable in terms of ROW constraints, assessed using the methodology set out in Section 1.7.
5 = Connectivity/Accessibility: Existing land use at a station option does not support transit use, assessed using the methodology set out in Section 1.7.
6 = Community Impact: The alternative does not minimize disruption to neighborhoods and communities, divides an existing community, or does not minimize conflicts with community resources, assessed using the methodology set out in Section 1.7.
7 = Environment: The alternative does not minimize impacts on environmental resources or environmental quality, assessed using the methodology set out in Section 1.7.
Source: HMM/URS/Arup Joint Venture, 2015.

Appendix A
Detailed Evaluation Tables

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Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
Design Objectives										
Journey time (Palmdale to Burbank)	14.4 minutes 49.0 miles	14.5 minutes 49.0 miles	14.3 minutes 49.4 miles	14.4 minutes 49.4 miles	11.2 minutes 41.2 miles	11.3 minutes 41.6 miles	11.3 minutes 37.7 miles	11.4 minutes 38.2 miles	11.0 minutes 36.2 miles	11.2 minutes 36.6 miles
Intermodal Connections	Achieves the HSR objective of integrating HSR with existing intercity and regional rail routes at Palmdale and Burbank, provides a direct connection to Metrolink services.	Same as SR14-1	Same as SR14-1	Same as SR14-1	Same as SR14-1	Same as SR14-1	Same as SR14-1	Same as SR14-1	Same as SR14-1	Same as SR14-1
Tunnel Length	Total Length 20.7 miles Longest Tunnel 8.9 miles	Total Length 18.9 miles Longest Tunnel 7.2 miles	Total Length 20.0 miles Longest Tunnel 8.9 miles	Total Length 18.2 miles Longest Tunnel 7.0 miles	Total Length 20.2 miles Longest Tunnel 13.8 miles	Total Length 22.0 miles Longest Tunnel 13.8 miles	Total Length 19.5 miles Longest Tunnel 12.3 miles	Total Length 21.3 miles Longest Tunnel 12.3 miles	Total Length 21.2 miles Longest Tunnel 13.3 miles	Total Length 23.0 miles Longest Tunnel 13.3 miles
Operating Costs	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Capital Costs	1.09	1.02	1.07	1.00	1.17	1.22	1.10	1.15	1.13	1.18
Constructability	Sierra Highway realignment through Palmdale. Metrolink realignment at Lake Palmdale and Antelope Valley Line. Would require Una Lake to be relocated. Tunneling under California Aqueduct. Low point in long tunnel. Long viaducts crossing the SR14 in Acton and the Santa Clara river. 13 grade separations Shallow tunnel beneath residential communities may require easements.	Same as SR14-1.	Same as SR14-1 except no long viaducts crossing the SR14 in Acton.	Same as SR14-3.	Sierra Highway realignment at Lake Palmdale. Metrolink realignment at Lake Palmdale and Antelope Valley Line. Una Lake relocation. California Aqueduct Syphon would have to be extended because of direct impacts. Realignments of Sierra Highway, Angeles Forest Highway, SR14 on/off ramp and Metrolink just North of the Vincent Grade/Acton Metrolink station. Has a deep and long tunnel through the ANF mountainous areas which would present challenging construction access. Shallow tunnel	Same as E1a except is East of Vincent Substation so realignments around the Vincent Grade/Acton Metrolink station are not required. Additional tunnel and longer viaducts crossings south of Palmdale	Similar constructability as E1a but more complex and longer construction duration due to longer tunnel. Constructing the viaduct crossing over Tujunga Wash and I-210 on a skew would be complex. Depressed Station proposed inside airport property.	Same as E2a except at Vincent Substation follows E1b.	Similar to Alternative E2a Cut and cover trench through Angeles National Golf Club TBM launch and constructions site facilities may be challenging. Deep cut and cover trench at end of Bob Hope Airport runway and adjacent to Hollywood Way will be difficult to construct whilst maintaining operation of the runway. Has the second longest tunnel (13.3 miles) of all alternatives.	Same as E3a except at Vincent Substation follows E1b.

¹ Throughout this evaluation table, particular measurement criteria are separated by tunnel and non-tunnel vertical profiles. For most measurement criteria, tunnel profiles, as compared to non-tunnel profiles, are anticipated to have no potential surface impacts.

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
	Construction of trench next to airports facilities, closure of the airport perimeter road and the loss of aircraft parking bays.				beneath residential community's houses may require easements. Has the longest tunnel (13.8 miles) of all alternatives. Construction of trench next to airports facilities, closure of the airport perimeter road and the loss of aircraft parking bays.					
Land Use										
Consistency with other planning efforts ²	<p>Existing Land Uses: The alternative is inconsistent with existing land uses in the City of Palmdale where the at-grade alignment would displace existing businesses, would displace existing residences, and would cross through Una Lake.</p> <p>The alternative is inconsistent with existing land uses in Unincorporated Los Angeles County where the at-grade alignment displaces existing residences and runs directly adjacent to existing residences.</p> <p>The alternative is inconsistent with existing land uses in the City of Los Angeles where the at-grade alignment displaces existing residences, and where viaduct passes over existing residences.</p>	<p>Existing Land Uses: Same as SR14-1 through the City of Palmdale and unincorporated areas of Los Angeles County.</p> <p>The alternative is inconsistent with existing land uses in the City of Santa Clarita where at-grade alignment displaces and travels through existing residential parcels, displaces existing businesses, and where viaduct passes over existing residences.</p> <p>The alternative is inconsistent with existing land uses in the City of Los Angeles where viaducts go over existing residences.</p>	<p>Existing Land Uses: Same as SR14-1 through the City of Palmdale and unincorporated areas of Los Angeles County.</p> <p>The alternative is inconsistent with existing land uses in the City of Los Angeles where viaducts go over existing residences.</p> <p>Planned Land Uses: The alternative is inconsistent with portions of the same plans as SR14-1.</p>	<p>Existing Land Uses: Same as SR14-1 through the City of Palmdale and unincorporated areas of Los Angeles County.</p> <p>The alternative is inconsistent with existing land uses in the City of Santa Clarita where at-grade alignment displaces and cuts through existing residential parcels, displaces existing businesses, and where viaduct passes over existing residences.</p> <p>The alternative is inconsistent with existing land uses in the City of Los Angeles where viaducts go over existing residences.</p>	<p>Existing Land Uses: This alternative is inconsistent with existing land uses in the City of Palmdale where the at-grade alignment would displace existing businesses, residences, and would cross Una Lake.</p> <p>The alternative is inconsistent with existing land uses in the County of Los Angeles where it displaces existing residences, would cross an existing water channel at grade, would be in a trench across an existing business, would displace existing residences, and would run directly adjacent to an existing residence</p>	<p>Existing Land Uses: Same as SR14-1 through the City of Palmdale.</p> <p>The alternative is inconsistent with existing land uses in Unincorporated Los Angeles County where it would cross an existing water channel at grade, would be directly adjacent to an existing residence in viaduct, and would displace an existing residence.</p> <p>It is inconsistent with existing land uses in the City of Los Angeles where it is cut and cover through existing businesses. .</p> <p>Planned Land Uses: The alternative is inconsistent with</p>	<p>Existing Land Uses: Same as SR14-1 through the City of Palmdale.</p> <p>Same as E1a through County of Los Angeles.</p> <p>The alternative is inconsistent with existing land uses in the City of Los Angeles where it is at-grade through existing residences, via viaduct over existing residences, and cut and cover through existing businesses.</p> <p>The alternative is inconsistent with existing land uses in the City of Burbank where it is cut and cover through existing businesses and the Burbank</p>	<p>Existing Land Uses: Same as SR14-1 through the City of Palmdale.</p> <p>Same as E1b through unincorporated areas of Los Angeles County.</p> <p>The alternative is inconsistent with existing land uses in the City of Burbank where it runs at-grade through an existing hotel, existing businesses/offices, and existing industrial uses.</p> <p>It is inconsistent with existing land uses in the City of Los Angeles where it runs at-grade through existing residences, and where it runs cut-and-cover through</p>	<p>Existing Land Uses: Same as SR14-1 through the City of Palmdale.</p> <p>The alternative is inconsistent with existing land uses in the County of Los Angeles where it displaces an existing residence, is cut and cover/at grade through an existing business, is via viaduct above existing residences, and is at grade through an existing farm.</p> <p>The alternative is inconsistent with existing land uses in the City of Los Angeles where it is cut and cover through the Angeles National Golf Club and trench through existing residences.</p>	<p>Existing Land Uses: Same as SR14-1 through the City of Palmdale.</p> <p>The alternative is inconsistent with existing land uses in the County of Los Angeles where it runs at grade and via viaduct directly adjacent to and through existing residences and is at grade through an existing farm.</p> <p>Same as E3a through City of Los Angeles.</p> <p>Same as E3a through City of Los Angeles.</p> <p>Planned Land Uses: The alternative is inconsistent with portions of the same plans as E1a.</p>

² The USFS has developed a Land Management Plan for the Angeles National Forest that identifies land use zones. These uses range from Developed Areas Interface to Back Country to Critical Biological areas. The proposed alignments would be evaluated to ensure that conflict with the identified land uses in the Land Management Plan are minimized, for example, by utilizing existing access roads whenever possible. The future environmental documents will conduct a detailed analysis on the consistency of alignments alternatives with the Angeles National Forest Land Management Plan.

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
	Angeles where viaducts go over existing residences. Planned Land Uses: The alternative is inconsistent with portions of the following plans: <ul style="list-style-type: none">Palmdale General Plan.Los Angeles County General Plan.City of Santa Clarita General Plan.City of Los Angeles General Plan.	Planned Land Uses: The alternative is inconsistent with portions of the same plans as SR14-1.		Planned Land Uses: The alternative is inconsistent with portions of the same plans as SR14-1.	at grade. The alternative is inconsistent with existing land uses in the City of Los Angeles where it is cut and cover through existing businesses. Planned Land Uses: The alternative is inconsistent with portions of the following plans: <ul style="list-style-type: none">Palmdale General PlanLos Angeles County General Plan	portions of the following plans: <ul style="list-style-type: none">Palmdale General PlanLos Angeles County General Plan	Airport, at grade through existing businesses, and at grade directly adjacent to existing residences. Planned Land Uses: The alternative is inconsistent with portions of the same plans as E1a.	existing warehouses/businesses. Planned Land Uses: The alternative is inconsistent with portions of the following plans: <ul style="list-style-type: none">Palmdale General Plan.Los Angeles County General Plan.City of Los Angeles Sun Valley - La Tuna CanyonCommunity Plan Burbank General Plan.	The alternative is inconsistent with existing land uses in the City of Burbank where it is trench through existing businesses and the Burbank Airport, at grade directly adjacent to existing residences, and at grade through existing businesses. Planned Land Uses: The alternative is inconsistent with portions of the same plans as E1a.	
Disruption to Communities										
Disruption to Existing Railroad	Existing Metrolink tracks in Palmdale would be realigned around Una Lake area. Shares Metrolink ROW in the San Fernando valley corridor from Sylmar to Burbank. Existing railroad ROW would be utilized and tracks realigned through Burbank.	Similar to SR14-1. Additional Metrolink realignments required in Santa Clarita.	Similar to SR14-1.	Similar to SR14-2.	Existing Metrolink tracks in Palmdale would be realigned. Existing Metrolink tracks just North of Vincent Grade/Acton Metrolink station would be realigned. Shares Metrolink ROW in the San Fernando valley corridor from approximately Sheldon Street to Burbank. Existing railroad ROW would be utilized and tracks realigned through Burbank.	Similar to E1a but no Metrolink realignment around Vincent Grade/Acton Metrolink station is required.	Existing Metrolink tracks in Palmdale would be realigned. Additional realignment to the Metrolink on the Ventura County Line.	Similar to Alternative E2a.	Similar to Alternative E2a.	Similar to Alternative E3a.
Disruption to, and Relocation of, Utilities	Relocation of large diameter storm drain through Palmdale. Relocation of a portion of the 12' wide open channel/boxed storm drain culvert (City of Burbank) will be necessary. This relocation will shift it	Similar to SR14-1.	Similar to SR14-1.	Similar to SR14-1.	Relocation of a portion of the 12' wide open channel/boxed storm drain culvert (City of Burbank) will be necessary. This relocation will shift it to the other side of the existing Metrolink rail. It is parallel with the proposed Burbank	Similar to E1a, with additional impacts to transmission lines east of Vincent Substation.	Relocation of a portion of the 12' wide open channel/boxed storm drain culvert (City of Burbank) will be necessary. This relocation will shift it to the other side of the existing Metrolink rail. It is parallel with the proposed Burbank	Similar to E1b, with additional utility relocations at the Burbank Airport will be necessary to facilitate the alignment, roadways, grade separation and temporary construction sites.	Relocation of a portion of the 12' wide open channel/boxed storm drain culvert (City of Burbank) will be necessary. This relocation will shift it to the other side of the existing Metrolink rail. It is parallel with the proposed	Similar to E2b.

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
	to the other side of the existing Metrolink rail. It is parallel with the proposed Burbank station and the existing Metrolink tracks that run east-west. General local utility relocations will be necessary to facilitate the alignment; mostly water, sewer, gas, and drainage facilities. Greater overall impacts due to retaining wall/trenching along the alignment of several larger utilities, including 20" oil lines, 16" gas transmission lines, large storm drains (>48" gravity), and sanitary sewer lines (gravity).				station and the existing Metrolink tracks that run east-west. General local utility relocations will be necessary to facilitate the alignment; mostly water, sewer, gas, and drainage facilities. Greater overall impacts due to retaining wall/trenching along the alignment of several larger utilities, including 20" oil lines, 16" gas transmission lines, large storm drains (>48" gravity), and sanitary sewer lines (gravity).		station and the existing Metrolink tracks that run east-west. General local utility relocations will be necessary to facilitate the alignment; mostly water, sewer, gas, and drainage facilities. Medium impacts due to trenching/tunneling occurring in relatively localized area where there are major utilities.		Burbank station and the existing Metrolink tracks that run east-west. General local utility relocations will be necessary to facilitate the alignment; mostly water, sewer, gas, and drainage facilities. Medium impacts due to trenching/tunneling occurring in relatively localized area where there are major utilities.	
Residential Easements and/or Displacements (within 100 feet on either side of the centerline)	<u>Tunnel</u> 28 multi-family 78 single-family	<u>Tunnel</u> 18 multi-family 68 single-family	<u>Tunnel</u> 28 multi-family 62 single-family	<u>Tunnel</u> 28 multi-family 53 single-family	<u>Tunnel</u> 4 Multi-family 247 Single-family	<u>Tunnel</u> 4 Multi-family 247 Single-family	<u>Tunnel</u> 7 multi-family 259 single-family	<u>Tunnel</u> 7 multi-family 254 single-family	<u>Tunnel</u> 2 multi-family 104 single-family	<u>Tunnel</u> 2 multi-family 103 single-family
	<u>Non-Tunnel</u> 3 multi-family 48 single-family	<u>Non-Tunnel</u> 3 multi-family 59 single-family	<u>Non-Tunnel</u> 3 multi-family 34 single-family	<u>Non-Tunnel</u> 3 multi-family 45 single-family	<u>Non-Tunnel</u> 0 multi-family 16 single-family	<u>Non-Tunnel</u> 0 multi-family 16 single-family	<u>Non-Tunnel</u> 1 multi-family 62 single-family	<u>Non-Tunnel</u> 1 multi-family 53 single-family	<u>Non-Tunnel</u> 26 multi-family 92 single-family	<u>Non-Tunnel</u> 26 multi-family 93 single-family
Business Easements and/or Displacements (within 100 feet on either side of the centerline)	<u>Tunnel</u> 35 commercial parcels 8 industrial parcels	<u>Tunnel</u> 30 commercial parcels 7 industrial parcels	<u>Tunnel</u> 34 commercial parcels 6 industrial parcels	<u>Tunnel</u> 33 commercial parcels 5 industrial parcels	<u>Tunnel</u> 36 commercial parcels 56 industrial parcels	<u>Tunnel</u> 36 commercial parcels 56 industrial parcels	<u>Tunnel</u> 14 commercial parcels 7 industrial parcels	<u>Tunnel</u> 14 commercial parcels 7 industrial parcels	<u>Tunnel</u> 3 commercial parcels 1 industrial parcels	<u>Tunnel</u> 3 commercial parcels 1 industrial parcels
	<u>Non-Tunnel</u> 254 commercial parcels 240 industrial parcels	<u>Non-Tunnel</u> 255 commercial parcels 240 industrial parcels	<u>Non-Tunnel</u> 254 commercial parcels 239 industrial parcels	<u>Non-Tunnel</u> 255 commercial parcels 240 industrial parcels	<u>Non-Tunnel</u> 77 commercial parcels 107 industrial parcels	<u>Non-Tunnel</u> 80 commercial parcels 106 industrial parcels	<u>Non-Tunnel</u> 104 commercial parcels 66 industrial parcels	<u>Non-Tunnel</u> 93 commercial parcels 65 industrial parcels	<u>Non-Tunnel</u> 91 commercial parcels 77 industrial parcels	<u>Non-Tunnel</u> 94 commercial parcels 76 industrial parcels
Proximity to Schools (Within 1,500 feet on either side of the centerline)	<u>Tunnel</u> 3	<u>Tunnel</u> 1	<u>Tunnel</u> 4	<u>Tunnel</u> 2	<u>Tunnel</u> 8	<u>Tunnel</u> 8	<u>Tunnel</u> 2	<u>Tunnel</u> 2	<u>Tunnel</u> 2	<u>Tunnel</u> 1
	Fair Oaks Ranch Community School, Pinecrest Schools, Sulphur Spring School	Fair Oaks Ranch Community School <u>Non-Tunnel</u> 19	Fair Oaks Ranch Community School, Pinecrest Schools, Sulphur Spring School,	Fair Oaks Ranch Community School, Vasquez High School	Calvary Baptist School, Glenwood ES, Guardian Angel School, Pacoima Charter School,	Calvary Baptist School, Glenwood ES, Guardian Angel School, Pacoima Charter School,	Glenwood Elementary School, St. Augustine Academy <u>Non-Tunnel</u> 7	Glenwood Elementary School, St. Augustine Academy <u>Non-Tunnel</u> 5	Village Christian School, Vinedale Elementary School <u>Non-Tunnel</u> 7	Vinedale Elementary School <u>Non-Tunnel</u> 7

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
	Non-Tunnel 17 Benjamin Franklin School, Brandman University, Burbank Evening School, El Dorado Elementary School, Glenwood Elementary School, Intercoast Colleges, Osceola Elementary School, R. Rex Parris High School, Roscoe Elementary School, Saint Ferdinand's School, San Fernando Middle School, Sun Valley High School, Telfair Elementary School, Tumbleweed Elementary School, Valley Japanese School, Vasquez High School, Washington Elementary School Total Schools: 20	Benjamin Franklin School, Brandman University, Burbank Evening School, El Dorado Elementary School, Glenwood Elementary School, Intercoast Colleges, Osceola Elementary School, Pinecrest Schools, R. Rex Parris High School, Roscoe Elementary School, Saint Ferdinand's School, San Fernando Middle School, Sulphur Spring School, Sun Valley High School, Telfair Elementary School, Tumbleweed Elementary School, Valley Japanese School, Vasquez High School, Washington Elementary School Total Schools: 20	Vasquez High School Non-Tunnel 17 Benjamin Franklin School, Brandman University, Burbank Evening School, El Dorado Elementary School, Glenwood Elementary School, High Desert School, Intercoast Colleges, Osceola Elementary School, R. Rex Parris High School, Roscoe Elementary School, Saint Ferdinand's School, San Fernando Middle School, Sun Valley High School, Telfair Elementary School, Tumbleweed Elementary School, Valley Japanese School, Washington Elementary School Total Schools: 21	Non-Tunnel 19 Benjamin Franklin School, Brandman University, Burbank Evening School, El Dorado Elementary School, Glenwood Elementary School, High Desert School, Intercoast Colleges, Osceola Elementary School, Pinecrest Schools, R. Rex Parris High School, Roscoe Elementary School, Saint Ferdinand's School, San Fernando Middle School, Sulphur Spring School, Sun Valley High School, Telfair Elementary School, Tumbleweed Elementary School, Valley Japanese School, Washington Elementary School Total Schools: 21	Roscoe ES, San Fernando Valley Youth Build Charter School, Sun Valley HS, Valley Japanese School Non-Tunnel 7 Benjamin Franklin School, Brandman University, Burbank Evening School, Intercoast Colleges, R. Rex Parris HS, Tumbleweed ES, Washington ES Total Schools: 15	Roscoe ES, San Fernando Valley Youth Build Charter School, Sun Valley HS, Valley Japanese School Non-Tunnel 7 Benjamin Franklin School, Brandman University, Burbank Evening School, Intercoast Colleges, R. Rex Parris HS, Tumbleweed ES, Washington ES Total Schools: 15	Brandman University, Burbank Evening School, Intercoast Colleges, Monterey High School, Providencia Elementary School, R. Rex Parris High School, Tumbleweed Elementary School Total Schools: 9	Brandman University, Monterey High School, Providencia Elementary School, R. Rex Parris High School, Tumbleweed Elementary School Total Schools: 7	Brandman University, Burbank Evening School, Intercoast Colleges, Monterey High School, Providencia Elementary School, R. Rex Parris High School, Tumbleweed Elementary School Total Schools: 9	Brandman University, Burbank Evening School, Intercoast Colleges, Monterey High School, Providencia Elementary School, R. Rex Parris High School, Tumbleweed Elementary School Total Schools: 8
Proximity to Landfills (Within ¼-mile on either side of the centerline)	Tunnel 0 (0 Closed) Non-Tunnel 12 (6 Closed)	Tunnel 0 (0 Closed) Non-Tunnel 12 (6 Closed)	Tunnel 0 (0 Closed) Non-Tunnel 12 (6 Closed)	Tunnel 0 (0 Closed) Non-Tunnel 12 (6 Closed)	Tunnel 4 (4 Closed) Non-Tunnel 3 (0 Closed)	Tunnel 4 (4 Closed) Non-Tunnel 3 (0 Closed)	Tunnel 0 (0 Closed) Non-Tunnel 3 (0 Closed)	Tunnel 0 (0 Closed) Non-Tunnel 3 (0 Closed)	Tunnel 1 (0 Closed) Non-Tunnel 3 (0 Closed)	Tunnel 1 (0 Closed) Non-Tunnel 3 (0 Closed)
Highway Grade Separations and Closures	13 Grade separations, 10 realignments. Grade Separations are (from North to South): <ul style="list-style-type: none">Technology DrivePalmdale BlvdAvenue RAvenue SSierra HwayHubbard StMaclay AvenueBrand BlvdPaxton Street	Same as SR14-1.	Same as SR14-1.	Same as SR14-1.	10 grade separations, 9 roadway realignments. Grade Separations are (from North to South): <ul style="list-style-type: none">Technology DrivePalmdale BlvdAvenue RAvenue SSierra HwaySierra HwayForeston DriveAliso Canyon	8 grade separations, 8 roadway realignments. Grade Separations are (from North to South): <ul style="list-style-type: none">Technology DrivePalmdale BlvdAvenue RAvenue SSierra HwayAliso Canyon RoadSheldon Street	7 grade separations, 10 roadway realignments. Grade Separations are (from North to South): <ul style="list-style-type: none">Technology DrivePalmdale BlvdAvenue RAvenue SSierra HwayAliso CanyonWentworth Street	Same as E2a	7 grade separations, 8 roadway realignments. Grade Separations are (from North to South): <ul style="list-style-type: none">Technology DrivePalmdale BlvdAvenue RAvenue SSierra HwayAliso CanyonWentworth Street	9 grade separations, 6 roadway realignments. Grade Separations are (from North to South): <ul style="list-style-type: none">Technology DrivePalmdale BlvdAvenue RAvenue SSierra HwaySR14 On RampSR14 Off RampSierra HwayW Carson Mesa Rd

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
	<ul style="list-style-type: none">Van Nuys BlvdOsbourne StreetSheldon StreetMagnolia Blvd				Road <ul style="list-style-type: none">Sheldon StreetMagnolia Blvd	<ul style="list-style-type: none">Magnolia Blvd				
Environmental Resources										
Potential Section 4(f) and 6(f) Resources (Please note that for Cultural Resources there is a potential for both direct and indirect impacts to resources (consisting of archaeological and historic architecture sites) for tunnel and non-tunnel profiles of the alignment alternatives; therefore, the potentially impacted cultural resources were not separated by the tunnel and non-tunnel profiles of the alignment alternatives.)	Parklands³: Within 100 feet of the alignment: Tunnel 47.6 acres 1 bike route, and 3 trails 0.7 acres: Angeles National Forest Non-Tunnel 3.3 acres 32 bike routes, and 1 trail LA County Significant Ecological Areas (SEA): <u>Tunnel</u> <u>Existing</u> Santa Clara River – 1,310.2 acres <u>Proposed</u> ⁴ Santa Clara River – 1,310.2 acres <u>Non-Tunnel</u> <u>Existing</u> Santa Clara River – 1,232.4 acres Tujunga Valley/Hansen Dam – 20.7 acres <u>Proposed</u>	Parklands: Within 100 feet of the alignment: Tunnel 50.2 acres 1 bike route, and 3 trails 0.7 acres: Angeles National Forest Non-Tunnel 3.3 acres 32 bike routes, and 1 trail LA County Significant Ecological Areas (SEA): <u>Tunnel</u> <u>Existing</u> Santa Clara River – 1,186.3 acres <u>Proposed</u> Santa Clara River – 1,186.3 acres <u>Non-Tunnel</u> <u>Existing</u> Santa Clara River – 1,365.0 acres Tujunga Valley/Hansen Dam – 20.7 acres <u>Proposed</u>	Parklands: Within 100 feet of the alignment: Tunnel 50.2 acres 2 bike routes, and 3 trails 0.7 acres: Angeles National Forest Non-Tunnel 3.3 acres 32 bike routes, and 1 trail LA County Significant Ecological Areas (SEA): <u>Tunnel</u> <u>Existing</u> Santa Clara River – 1,315.2 acres <u>Proposed</u> Santa Clara River – 1,315.2 acres <u>Non-Tunnel</u> <u>Existing</u> Santa Clara River – 1,239.3 acres Tujunga Valley/Hansen Dam – 20.7 acres <u>Proposed</u>	Parklands: Within 100 feet of the alignment: Tunnel 50.2 acres 2 bike routes, and 3 trails 0.7 acres: Angeles National Forest Non-Tunnel 3.3 acres 32 bike routes, and 1 trail LA County Significant Ecological Areas (SEA): <u>Tunnel</u> <u>Existing</u> Santa Clara River – 1,191.3 acres <u>Proposed</u> Santa Clara River – 1,191.3 acres <u>Non-Tunnel</u> <u>Existing</u> Santa Clara River – 1,372.0 acres Tujunga Valley/Hansen Dam – 20.7 acres <u>Proposed</u>	Parklands: Within 100 feet of the alignment: Tunnel 4.9 acres 10 bike routes, and 3 trails 336.1 acres: Angeles National Forest Non-Tunnel 3.5 acres 14 bike routes, and 1 trail LA County Significant Ecological Areas (SEA): <u>Tunnel</u> <u>Existing</u> Kentucky Springs – 0.3 acres Tujunga Valley/Hansen Dam – 20.8 acres <u>Proposed</u> Santa Clara River – 954.6 acres Tujunga Valley/Hansen Dam – 28.1 acres <u>Non-Tunnel</u>	Parklands: Within 100 feet of the alignment: Tunnel 4.9 acres 10 bike routes, and 3 trails 348.1 acres: Angeles National Forest subtotal Non-Tunnel 3.5 acres 13 bike routes, and 1 trail LA County Significant Ecological Areas (SEA): <u>Tunnel</u> <u>Existing</u> Kentucky Springs – 95.6 acres Tujunga Valley/Hansen Dam – 20.8 acres <u>Proposed</u> Santa Clara River – 1,074.0 acres Tujunga Valley/Hansen Dam – 28.1 acres <u>Non-Tunnel</u>	Parklands: Within 100 feet of the alignment: Tunnel 2.0 acres 6 bike routes, and 3 trails 335.2 acres: Angeles National Forest Non-Tunnel 4.6 acres 15 bike routes, and 1 trail LA County Significant Ecological Areas (SEA): <u>Tunnel</u> <u>Existing</u> Tujunga Valley/Hansen Dam – 4.8 acres <u>Proposed</u> Santa Clara River – 817.3 acres Tujunga Valley/Hansen Dam – 2.4 acres <u>Non-Tunnel</u> <u>Existing</u> Kentucky Springs – 40.4 acres	Parklands: Within 100 feet of the alignment: Tunnel 2.0 acres 5 bike routes, and 3 trails 347.2 acres: Angeles National Forest Non-Tunnel 4.8 acres 13 bike routes, and 1 trails LA County Significant Ecological Areas (SEA): <u>Tunnel</u> <u>Existing</u> Kentucky Springs – 56.1 acres Tujunga Valley/Hansen Dam – 4.9 acres <u>Proposed</u> Santa Clara River – 1,035.5 acres Tujunga Valley/Hansen Dam – 2.4 acres <u>Non-Tunnel</u>	Parklands: Within 100 feet of the alignment: Tunnel 4.7 acres 2 bike routes, and 6 trails 372.4 acres: Angeles National Forest Non-Tunnel 2.0 acres 15 bike routes, and 0 trail LA County Significant Ecological Areas (SEA): <u>Tunnel</u> <u>Existing</u> Santa Clara River – 57.7 acres Tujunga Valley/Hansen Dam – 125.0 acres Verdugo Mountains – 558.8 acres <u>Proposed</u> Santa Clara River – 1,061.3 acres Tujunga Valley/Hansen Dam – 155.9 acres	Parklands: Within 100 feet of the alignment: Tunnel 4.7 acres 2 bike routes, and 6 trails 381 acres: Angeles National Forest Non-Tunnel 2.0 acres 14 bike routes, and 0 trail LA County Significant Ecological Areas (SEA): <u>Tunnel</u> <u>Existing</u> Kentucky Springs – 56.0 acres Santa Clara River – 61.8 acres Tujunga Valley/Hansen Dam – 125.0 acres Verdugo Mountains – 558.8 acres <u>Proposed</u> Santa Clara River – 1,237.7 acres Tujunga Valley/Hansen Dam – 155.9 acres Verdugo Mountains – 453.8 acres

³ Section 4(f) will be applicable to all parks and recreational areas of national, state, or local significance that are both publically owned and open to the public, while Section 6(f) will be applicable to lands acquired with Land and Water Conservation Act funds. Additionally, final determination of national, state, or local significance, the nature of Section 4(f) impacts, as well as determining if any of these lands were acquired with Land and Water Conservation Act funds will be determined in the environmental document.

⁴ The County of Los Angeles is currently reviewing SEA designations. If proposed SEAs are adopted by the County, then potential impacts from the HSR Project would be to the proposed acreages. Please note, proposed acres are not additive, if the proposed SEAs are adopted, then the potential impact numbers will be those listed under the proposed listing.

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
	<p>San Andreas – 111.7 acres Santa Clara River – 1,253.7 acres Tujunga Valley/Hansen Dam – 27.9 acres</p> <p>Cultural Resources 9 previously recorded Archaeological Sites are located within the archaeology study area (inclusive of project alignment approximate centerline and a 100-foot buffer). Of these, 1 may be considered a significant Archaeological Site.</p> <p>7 significant Historic Architectural Sites within historic architecture study area (inclusive of project alignment approximate centerline and a 100-foot buffer)</p>	<p>San Andreas – 111.7 acres Santa Clara River – 1,388.0 acres Tujunga Valley/Hansen Dam – 27.9 acres</p> <p>Cultural Resources 7 previously recorded Archaeological Sites are located within the archaeology study area (inclusive of project alignment approximate centerline and a 100-foot buffer). Of these, 1 may be considered a significant Archaeological Site.</p> <p>5 significant Historic Architectural Sites within historic architecture study area (inclusive of project alignment approximate centerline and a 100-foot buffer)</p>	<p>San Andreas – 114.0 acres Santa Clara River – 1,260.6 acres Tujunga Valley/Hansen Dam – 27.9 acres</p> <p>Cultural Resources 9 previously recorded Archaeological Sites are located within the archaeology study area (inclusive of project alignment approximate centerline and a 100-foot buffer). Of these, 1 may be considered a significant Archaeological Site.</p> <p>5 significant Historic Architectural Sites within historic architecture study area (inclusive of project alignment approximate centerline and a 100-foot buffer)</p>	<p>San Andreas – 114.0 acres Santa Clara River – 1,395.0 acres Tujunga Valley/Hansen Dam – 27.9 acres</p> <p>Cultural Resources 6 previously recorded Archaeological Sites are located within the archaeology study area (inclusive of project alignment approximate centerline and a 100-foot buffer). Of these, 1 may be considered a significant Archaeological Site.</p> <p>5 significant Historic Architectural Sites within historic architecture study area (inclusive of project alignment approximate centerline and a 100-foot buffer)</p>	<p><u>Existing</u> Kentucky Springs – 40.2 acres Santa Clara River – 148.7 acres <u>Proposed</u> San Andreas – 115.7 acres Santa Clara River – 508.9 acres</p> <p>Cultural Resources 12 previously recorded Archaeological Sites are located within the archaeology study area (inclusive of project alignment approximate centerline and a 100-foot buffer). Of these, 1 may be considered a significant Archaeological Site.</p> <p>3 significant Historic Architectural Sites within historic architecture study area (inclusive of project alignment approximate centerline and a 100-foot buffer)</p>	<p><u>Existing</u> Kentucky Springs – 318.4 acres Santa Clara River – 148.7 acres <u>Proposed</u> San Andreas – 115.7 acres Santa Clara River – 717.8 acres</p> <p>Cultural Resources 11 previously recorded Archaeological Sites are located within the archaeology study area (inclusive of project alignment approximate centerline and a 100-foot buffer). Of these, 1 may be considered a significant Archaeological Site.</p> <p>2 significant Historic Architectural Sites within historic architecture study area (inclusive of project alignment approximate centerline and a 100-foot buffer)</p>	<p>Santa Clara River – 164.0 acres Tujunga Valley/Hansen Dam – 116.5 acres <u>Proposed</u> San Andreas – 115.6 acres Santa Clara River – 652.6 acres Tujunga Valley/Hansen Dam – 99.7 acres</p> <p>Cultural Resources 11 previously recorded Archaeological Sites are located within the archaeology study area (inclusive of project alignment approximate centerline and a 100-foot buffer). Of these, 1 may be considered a significant Archaeological Site.</p> <p>3 significant Historic Architectural Sites within historic architecture study area (inclusive of project alignment approximate centerline and a 100-foot buffer)</p>	<p><u>Existing</u> Kentucky Springs – 358.0 acres Santa Clara River – 164.0 acres Tujunga Valley/Hansen Dam – 116.5 acres <u>Proposed</u> San Andreas – 115.7 acres Santa Clara River – 763.7 acres Tujunga Valley/Hansen Dam – 99.6 acres</p> <p>Cultural Resources 2 previously recorded Archaeological Sites are located within the archaeology study area (inclusive of project alignment approximate centerline and a 100-foot buffer). Of these, 1 may be considered a significant Archaeological Site.</p> <p>2 significant Historic Architectural Sites within historic architecture study area (inclusive of project alignment approximate centerline and a 100-foot buffer)</p>	<p>Verdugo Mountains – 453.8 acres</p> <p>Non-Tunnel</p> <p><u>Existing</u> Kentucky Springs – 40.4 acres <u>Proposed</u> San Andreas – 115.7 acres Santa Clara River – 349.9 acres</p> <p>Cultural Resources 11 previously recorded Archaeological Sites are located within the archaeology study area (inclusive of project alignment approximate centerline and a 100-foot buffer). Of these, 1 may be considered a significant Archaeological Site.</p> <p>3 significant Historic Architectural Sites within historic architecture study area (inclusive of project alignment approximate centerline and a 100-foot buffer)</p>	<p>Non-Tunnel</p> <p><u>Existing</u> Kentucky Springs – 357.9 acres <u>Proposed</u> San Andreas – 115.7 acres Santa Clara River – 481.7 acres</p> <p>Cultural Resources 9 previously recorded Archaeological Sites are located within the archaeology study area (inclusive of project alignment approximate centerline and a 100-foot buffer). Of these, 1 may be considered a significant Archaeological Site.</p> <p>2 significant Historic Architectural Sites within historic architecture study area (inclusive of project alignment approximate centerline and a 100-foot buffer)</p>
<p>Biological/Aquatic Resources Potential impacts are calculated using the following distances: Plants: 100-feet Aquatic Resources: 250-ft Wildlife: 1,000-ft</p>	<p>Aquatic Resources: Tunnel</p> <p>Subtotal of Aquatic Resource Impacts (acres): 9.4</p> <p>Wetland Habitats (acres): 1.6</p> <p>Streams, Creeks, Canals (miles): 3.2</p>	<p>Aquatic Resources: Tunnel</p> <p>Subtotal of Aquatic Resource Impacts (acres): 9.4</p> <p>Wetland Habitats (acres): 1.6</p> <p>Streams, Creeks, Canals (miles): 3.0</p>	<p>Aquatic Resources: Tunnel</p> <p>Subtotal of Aquatic Resource Impacts (acres): 9.0</p> <p>Wetland Habitats (acres): 1.5</p> <p>Streams, Creeks, Canals (miles): 3.6</p>	<p>Aquatic Resources: Tunnel</p> <p>Subtotal of Aquatic Resource Impacts (acres): 9.0</p> <p>Wetland Habitats (acres): 1.5</p> <p>Streams, Creeks, Canals (miles): 3.4</p>	<p>Aquatic Resources: Tunnel</p> <p>Subtotal of Aquatic Resource Impacts (acres): 18.9</p> <p>Wetland Habitats (acres): 3.7</p> <p>Streams, Creeks, Canals (miles): 3.6</p>	<p>Aquatic Resources: Tunnel</p> <p>Subtotal of Aquatic Resource Impacts (acres): 18.9</p> <p>Wetland Habitats (acres): 3.7</p> <p>Streams, Creeks, Canals (miles): 4.1</p>	<p>Aquatic Resources: Tunnel</p> <p>Subtotal of Aquatic Resource Impacts (acres): 0</p> <p>Wetland Habitats (acres): 0</p> <p>Streams, Creeks, Canals (miles): 5.6</p>	<p>Aquatic Resources: Tunnel</p> <p>Subtotal of Aquatic Resource Impacts (acres): 21.0</p> <p>Wetland Habitats (acres): 3.9</p> <p>Streams, Creeks, Canals (miles): 6.4</p>	<p>Aquatic Resources: Tunnel</p> <p>Subtotal of Aquatic Resource Impacts (acres): 3.3</p> <p>Wetland Habitats (acres): 0</p> <p>Streams, Creeks, Canals (miles): 7.2</p>	<p>Aquatic Resources: Tunnel</p> <p>Subtotal of Aquatic Resource Impacts (acres): 3.3</p> <p>Wetland Habitats (acres): 0</p> <p>Streams, Creeks, Canals (miles): 7.2</p>

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
	Lakes, Ponds, Rivers (acres): 7.8	Lakes, Ponds, Rivers (acres): 7.8	Lakes, Ponds, Rivers (acres): 7.5	Lakes, Ponds, Rivers (acres): 7.5	Lakes, Ponds, Rivers (acres): 15.2	Lakes, Ponds, Rivers (acres): 15.2	Lakes, Ponds, Rivers (acres): 0	Lakes, Ponds, Rivers (acres): 17.1	Lakes, Ponds, Rivers (acres): 3.3	Lakes, Ponds, Rivers (acres): 3.3
	Reservoirs (acres): 0	Reservoirs (acres): 0	Reservoirs (acres): 0	Reservoirs (acres): 0	Reservoirs (acres): 0.4	Reservoirs (acres): 0.4	Reservoirs (acres): 0	Reservoirs (acres): 0	Reservoirs (acres): 0	Reservoirs (acres): 0
	Critical Habitat (acres): Coastal California Gnatcatcher – 1,046.0	Critical Habitat (acres): Coastal California Gnatcatcher – 1,046.0	Critical Habitat (acres): Coastal California Gnatcatcher – 1,046.0	Critical Habitat (acres): Coastal California Gnatcatcher – 1,046.0	Critical Habitat (acres): No Impacts to Critical Habitat	Critical Habitat (acres): No Impacts to Critical Habitat	Critical Habitat (acres): Santa Ana Sucker – 2.3 Southwestern Willow Flycatcher – 2.4	Critical Habitat (acres): Santa Ana Sucker – 2.3 Southwestern Willow Flycatcher – 2.4	Critical Habitat (acres): Santa Ana Sucker – 152.2	Critical Habitat (acres): Santa Ana Sucker – 152.2
	Special-Status Wildlife (CWHR, acres) American Badger – 4,959.7 Arroyo Toad – 4,393.2 Burrowing Owl – 45.3 California Red-Legged Frog – 4,959.8 California Vole – 4,959.7 Coast Horned Lizard – 4,890.4 Cooper's Hawk – 4,959.8 Desert Woodrat – 4,959.7 Ferruginous Hawk – 4,959.8 Golden Eagle – 4,959.8 Lawrence's Goldfinch – 4,959.8 Least Bell's Vireo – 1,274.7 Le Conte's Thrasher – 45.3 Mohave Ground Squirrel – 45.3 Northern Harrier – 4,959.8 Pallid Bat – 4,959.7 Prairie Falcon – 4,959.8 Rufous-Crowned Sparrow – 4,914.4 Silver-Haired Bat – 4,148.6 Southern Grasshopper Mouse –	Special-Status Wildlife (CWHR, acres) American Badger – 4,563.0 Arroyo Toad – 3,996.5 Burrowing Owl – 45.3 California Red-Legged Frog – 4,563.0 California Vole – 4,563.0 Coast Horned Lizard – 4,493.6 Cooper's Hawk – 4,563.0 Desert Woodrat – 4,563.0 Ferruginous Hawk – 4,563.0 Golden Eagle – 4,563.0 Lawrence's Goldfinch – 4,563.0 Least Bell's Vireo – 1,274.7 Le Conte's Thrasher – 45.3 Mohave Ground Squirrel – 45.3 Northern Harrier – 4,563.0 Pallid Bat – 4,563.0 Prairie Falcon – 4,563.0 Rufous-Crowned Sparrow – 4,517.7 Silver-Haired Bat – 3,751.8 Southern Grasshopper Mouse –	Special-Status Wildlife (CWHR, acres) American Badger – 4,775.2 Arroyo Toad – 4,214.3 Burrowing Owl – 17.3 California Red-Legged Frog – 4,775.2 California Vole – 4,775.2 Coast Horned Lizard – 4,733.8 Cooper's Hawk – 4,775.2 Desert Woodrat – 4,775.2 Ferruginous Hawk – 4,775.2 Golden Eagle – 4,775.2 Lawrence's Goldfinch – 4,775.2 Least Bell's Vireo – 1,274.7 Le Conte's Thrasher – 17.3 Mohave Ground Squirrel – 17.3 Northern Harrier – 4,775.2 Pallid Bat – 4,775.2 Prairie Falcon – 4,775.2 Rufous-Crowned Sparrow – 4,757.8 Silver-Haired Bat – 3,964.0 Southern Grasshopper Mouse –	Special-Status Wildlife (CWHR, acres) American Badger – 4,378.4 Arroyo Toad – 3,817.6 Burrowing Owl – 17.3 California Red-Legged Frog – 4,378.5 California Vole – 4,378.4 Coast Horned Lizard – 4,337.0 Cooper's Hawk – 4,378.4 Desert Woodrat – 4,378.4 Ferruginous Hawk – 4,378.4 Golden Eagle – 4,378.4 Lawrence's Goldfinch – 4,378.4 Least Bell's Vireo – 1,274.7 Le Conte's Thrasher – 17.3 Mohave Ground Squirrel – 17.3 Northern Harrier – 4,378.4 Pallid Bat – 4,378.4 Prairie Falcon – 4,378.4 Rufous-Crowned Sparrow – 4,361.1 Silver-Haired Bat – 3,567.3 Southern Grasshopper Mouse –	Special-Status Wildlife (CWHR, acres) American Badger – 6,048.5 Arroyo Toad – 3,570.4 Burrowing Owl – 7,075.3 California Red-Legged Frog – 4,151.2 California Vole – 6,048.5 Coast Horned Lizard – 3,715.3 Cooper's Hawk – 10,694.6 Desert Woodrat – 6,048.5 Ferruginous Hawk – 17,769.9 Northern Harrier – 17,769.9 Pallid Bat – 6,048.5 Prairie Falcon – 17,769.9 Sierra Madre Yellow-Legged Frog – 846.6 Silver-Haired Bat – 6,048.5 Southern Grasshopper Mouse – 6,048.5 Two-Striped Garter Snake – 6,048.5 Western Mastiff Bat – 6,048.5 Western Pond Turtle – 5,526.1 Western Spadefoot – 2,568.7	Special-Status Wildlife (CWHR, acres) American Badger – 6,401.3 Arroyo Toad – 3,923.2 Burrowing Owl – 7,075.3 California Red-Legged Frog – 4,504.0 California Vole – 6,401.3 Coast Horned Lizard – 4,068.1 Cooper's Hawk – 11,427.9 Desert Woodrat – 6,401.3 Ferruginous Hawk – 18,503.1 Northern Harrier – 18,503.1 Pallid Bat – 6,401.3 Prairie Falcon – 18,503.1 Sierra Madre Yellow-Legged Frog – 846.6 Silver-Haired Bat – 6,401.3 Southern Grasshopper Mouse – 6,401.3 Two-Striped Garter Snake – 6,401.3 Western Mastiff Bat – 6,401.3 Western Pond Turtle – 5,524.8 Western Spadefoot – 2,568.7	Special-Status Wildlife (CWHR, acres) American Badger – 5,108.7 Arroyo Toad – 3,112.9 Burrowing Owl – 1,726.5 California Red-Legged Frog – 3602.0 California Vole – 3,108.7 Coast Horned Lizard – 3,399.9 Cooper's Hawk – 3,382.2 Desert Woodrat – 5,108.7 Ferruginous Hawk – 5,108.7 Golden Eagle – 3,382.2 Lawrence's Goldfinch – 5,108.7 Northern Harrier – 5,108.7 Pallid Bat – 5,108.7 Prairie Falcon – 5,108.7 Rufous-Crowned Sparrow – 5,108.7 Sierra Madre Yellow-Legged Frog – 868.7 Silver-Haired Bat – 5,108.7 Southern Grasshopper Mouse –	Special-Status Wildlife (CWHR, acres) American Badger – 5,592.7 Arroyo Toad – 3,562.4 Burrowing Owl – 1,761.0 California Red-Legged Frog – 4,051.5 California Vole – 5,592.7 Coast Horned Lizard – 3,849.4 Cooper's Hawk – 3,831.7 Desert Woodrat – 5,592.7 Ferruginous Hawk – 5,592.7 Golden Eagle – 5,592.7 Lawrence's Goldfinch – 5,592.7 Northern Harrier – 5,592.7 Pallid Bat – 5,592.7 Prairie Falcon – 5,592.7 Rufous-Crowned Sparrow – 5,592.7 Sierra Madre Yellow-Legged Frog – 898.7 Silver-Haired Bat – 5,592.7 Southern Grasshopper Mouse – 5,592.7	Special-Status Wildlife (CWHR, acres) American Badger – 5,717.1 Arroyo Toad – 3,681.8 Burrowing Owl – 1,823.5 California Red-Legged Frog – 4,011.7 California Vole – 5,717.1 Coast Horned Lizard – 3,914.4 Cooper's Hawk – 3,893.7 Desert Woodrat – 5,717.1 Ferruginous Hawk – 5,715.9 Golden Eagle – 3,893.7 Lawrence's Goldfinch – 5,717.1 Northern Harrier – 5,715.9 Pallid Bat – 5,717.1 Prairie Falcon – 5,717.1 Rufous-Crowned Sparrow – 5,715.9 Sierra Madre Yellow-Legged Frog – 2,775.1 Silver-Haired Bat – 5,717.1 Southern Grasshopper Mouse – 5,717.1	Special-Status Wildlife (CWHR, acres) American Badger – 6,142.9 Arroyo Toad – 4,107.6 Burrowing Owl – 1,823.4 California Red-Legged Frog – 4,437.5 California Vole – 6,142.9 Coast Horned Lizard – 4,340.2 Cooper's Hawk – 4,319.5 Desert Woodrat – 6,142.9 Ferruginous Hawk – 6,142.9 Golden Eagle – 4,319.5 Lawrence's Goldfinch – 6,142.9 Northern Harrier – 6,142.9 Pallid Bat – 6,142.9 Prairie Falcon – 6,142.9 Rufous-Crowned Sparrow – 6,142.9 Sierra Madre Yellow-Legged Frog – 2,757.7 Silver-Haired Bat – 6,142.9 Southern Grasshopper Mouse – 6,142.9 Tricolored Blackbird – 1,823.4 Two-Striped Garter Snake – 6,142.9 Western Mastiff Bat – 6,142.9

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
	4,959.8 Tricolored Blackbird – 423.5 Two-Striped Garter Snake – 4,959.8 Western Mastiff Bat – 4,959.7 Western Pond Turtle – 3,843.9 Western Spadefoot – 2,112.3 Western Whiptail – 4,959.8 Yellow Warbler – 4,914.4 Yellow-Breasted Chat – 4,914.4 Yuma Myotis Bat – 4,953.6 Special-Status Wildlife (CNDDDB Occurrences): Coast Horned Lizard Le Conte's Thrasher Silvery Legless Lizard Southern California Rufous-Crowned Sparrow Western Spadefoot Special-Status Plants (CNDDDB Occurrences): No CNDDDB Special-Status Plant Occurrences Non-Tunnel Subtotal of Aquatic Resource Impacts (acres): 16.6 Wetland Habitats (acres): 2.5 Streams, Creeks, Canals (miles): 7.4 Lakes, Ponds, Rivers (acres): 13.8	4,563.0 Tricolored Blackbird – 423.5 Two-Striped Garter Snake – 4,563.0 Western Mastiff Bat – 4,563.0 Western Pond Turtle – 3,447.1 Western Spadefoot – 1,715.6 Western Whiptail – 4,563.0 Yellow Warbler – 4,517.7 Yellow-Breasted Chat – 4,517.7 Yuma Myotis Bat – 4,556.9 Special-Status Wildlife (CNDDDB Occurrences): Coast Horned Lizard Le Conte's Thrasher Silvery Legless Lizard Southern California Rufous-Crowned Sparrow Western Spadefoot Special-Status Plants (CNDDDB Occurrences): No CNDDDB Special-Status Plant Occurrences Non-Tunnel Subtotal of Aquatic Resource Impacts (acres): 16.6 Wetland Habitats (acres): 2.5 Streams, Creeks, Canals (miles): 7.8 Lakes, Ponds, Rivers (acres): 13.8	4,775.2 Tricolored Blackbird – 395.5 Two-Striped Garter Snake – 4,775.2 Western Mastiff Bat – 4,775.2 Western Pond Turtle – 3,562.9 Western Spadefoot – 2,112.3 Western Whiptail – 4,775.2 Yellow Warbler – 4,757.8 Yellow-Breasted Chat – 4,757.8 Yuma Myotis Bat – 4,775.0 Special-Status Wildlife (CNDDDB Occurrences): Coast Horned Lizard Le Conte's Thrasher Silvery Legless Lizard Southern California Rufous-Crowned Sparrow Western Spadefoot Special-Status Plants (CNDDDB Occurrences): No CNDDDB Special-Status Plant Occurrences Non-Tunnel Subtotal of Aquatic Resource Impacts (acres): 16.9 Wetland Habitats (acres): 2.7 Streams, Creeks, Canals (miles): 7.5 Lakes, Ponds, Rivers (acres): 13.9	4,378.4 Tricolored Blackbird – 395.5 Two-Striped Garter Snake – 4,378.4 Western Mastiff Bat – 4,378.4 Western Pond Turtle – 3,166.2 Western Spadefoot – 1,715.6 Western Whiptail – 4,378.4 Yellow Warbler – 4,361.1 Yellow-Breasted Chat – 4,361.1 Yuma Myotis Bat – 4,378.3 Special-Status Wildlife (CNDDDB Occurrences): Coast Horned Lizard Le Conte's Thrasher Silvery Legless Lizard Southern California Rufous-Crowned Sparrow Western Spadefoot Special-Status Plants (CNDDDB Occurrences): No CNDDDB Special-Status Plant Occurrences Non-Tunnel Subtotal of Aquatic Resource Impacts (acres): 10.7 Wetland Habitats (acres): 2.3 Streams, Creeks, Canals (miles): 5.1 Lakes, Ponds, Rivers (acres): 8.4 Reservoirs (acres): 0 Critical Habitat (acres):	Western Whiptail – 4,151.2 Yuma Myotis Bat – 6,048.5 Special-Status Wildlife (CNDDDB Occurrences): Coast Horned Lizard Coastal California Gnatcatcher Golden Eagle Hoary Bat Swainson's Hawk Western Pond Turtle Western Yellow-Billed Cuckoo Special-Status Plants (CNDDDB Occurrences): Davidson's Bush-Mallow Nevin's Barberry Plummer's Mariposa-Lily Robinson's Pepper-Grass Short-Joint Beavertail Slender-Horned Spineflower Southern Tarplant Non-Tunnel Subtotal of Aquatic Resource Impacts (acres): 12.7 Wetland Habitats (acres): 2.3 Streams, Creeks, Canals (miles): 5.2 Lakes, Ponds, Rivers (acres): 10.4 Reservoirs (acres): 0 Critical Habitat (acres):	Western Whiptail – 4,504.0 Yuma Myotis Bat – 6,401.3 Special-Status Wildlife (CNDDDB Occurrences): Coast Horned Lizard Golden Eagle Hoary Bat Swainson's Hawk Western Pond Turtle Western Yellow-Billed Cuckoo Special-Status Plants (CNDDDB Occurrences): Davidson's Bush-Mallow Nevin's Barberry Plummer's Mariposa-Lily Robinson's Pepper-Grass Short-Joint Beavertail Slender-Horned Spineflower Southern Tarplant Non-Tunnel Subtotal of Aquatic Resource Impacts (acres): 12.7 Wetland Habitats (acres): 2.3 Streams, Creeks, Canals (miles): 5.2 Lakes, Ponds, Rivers (acres): 10.4 Reservoirs (acres): 0 Critical Habitat (acres):	5,108.7 Tricolored Blackbird – 1,726.5 Two-Striped Garter Snake – 5,108.7 Western Mastiff Bat – 5,108.7 Western Pond Turtle – 4,726.3 Western Spadefoot – 2,430.3 Western Whiptail – 3,602.0 Yellow Warbler – 5,108.7 Yellow-Breasted Chat – 2,018.7 Yuma Myotis Bat – 5,108.7 Special-Status Wildlife (CNDDDB Occurrences): Coast Horned Lizard Coastal California Gnatcatcher Golden Eagle Western Pond Turtle Special-Status Plants (CNDDDB Occurrences): Plummer's Mariposa-Lily Robinson's Pepper-Grass Non-Tunnel Subtotal of Aquatic Resource Impacts (acres): 26.1 Wetland Habitats (acres): 13.6 Streams, Creeks, Canals (miles): 6.6 Lakes, Ponds, Rivers (acres): 12.5 Reservoirs (acres): 0 Lakes, Ponds, Rivers (acres): 7.3	Tricolored Blackbird – 1,761.0 Two-Striped Garter Snake – 5,592.7 Western Mastiff Bat – 5,592.7 Western Pond Turtle – 4,758.8 Western Spadefoot – 2,464.8 Western Whiptail – 4,051.5 Yellow Warbler – 5,592.7 Yellow-Breasted Chat – 2,467.2 Yuma Myotis Bat – 5,592.7 Special-Status Wildlife (CNDDDB Occurrences): Coast Horned Lizard Coastal California Gnatcatcher Golden Eagle Coastal Whiptail Golden Eagle Prairie Falcon Townsend's Big-Eared Bat Western Pond Turtle Special-Status Plants (CNDDDB Occurrences): Plummer's Mariposa-Lily Robinson's Pepper-Grass Non-Tunnel Subtotal of Aquatic Resource Impacts (acres): 27.9 Wetland Habitats (acres): 13.6 Streams, Creeks, Canals (miles): 14.3	Tricolored Blackbird – 1,823.5 Two-Striped Garter Snake – 5,717.1 Western Mastiff Bat – 5,717.1 Western Pond Turtle – 5,199.7 Western Spadefoot – 2,093.0 Western Whiptail – 4,011.7 Yellow Warbler – 5,717.1 Yellow-Breasted Chat – 2,117.8 Yuma Myotis Bat – 5,717.1 Special-Status Wildlife (CNDDDB Occurrences): Coastal California Gnatcatcher Golden Eagle Santa Ana Sucker Grasshopper Mouse Southern Mountain Yellow-Legged Frog Western Pond Turtle Special-Status Plants (CNDDDB Occurrences): No CNDDDB Special-Status Plant Occurrences Non-Tunnel Subtotal of Aquatic Resource Impacts (acres): 9.2 Wetland Habitats (acres): 2.3 Streams, Creeks, Canals (miles): 5.2 Lakes, Ponds, Rivers (acres): 7.0 Reservoirs (acres): 0 Critical Habitat (acres): No Impacts to Critical	Western Pond Turtle – 5,225.0 Western Spadefoot – 2,094.2 Western Whiptail – 4,437.5 Yellow Warbler – 6,142.9 Yellow-Breasted Chat – 2,527.7 Yuma Myotis Bat – 6,142.9 Special-Status Wildlife (CNDDDB Occurrences): Coastal California Gnatcatcher Golden Eagle Santa Ana Sucker Southern Grasshopper Mouse Southern Mountain Yellow-Legged Frog Western Pond Turtle Special-Status Plants (CNDDDB Occurrences): No CNDDDB Special-Status Plant Occurrences Non-Tunnel Subtotal of Aquatic Resource Impacts (acres): 9.2 Wetland Habitats (acres): 2.3 Streams, Creeks, Canals (miles): 5.2 Lakes, Ponds, Rivers (acres): 7.0 Reservoirs (acres): 0 Critical Habitat (acres): No Impacts to Critical

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
	Reservoirs (acres): 0.3	Reservoirs (acres): 0.3	Reservoirs (acres): 0.3	Reservoirs (acres): 0.3	Arroyo Toad – 7.4	Arroyo Toad – 7.4	Critical Habitat (acres): Arroyo Toad – 15.7 Santa Ana Sucker – 74.6 Southwestern Willow Flycatcher – 87.5	Rivers (acres): 17.6 Reservoirs (acres): 0 Critical Habitat (acres): Arroyo Toad – 15.7 Santa Ana Sucker – 74.6 Southwestern Willow Flycatcher – 87.5	Reservoirs (acres): 0 Critical Habitat (acres): No Impacts to Critical Habitat Special-Status Wildlife (CWHR, acres) American Badger – 2,909.2 Arroyo Toad – 1,241.4 Burrowing Owl – 1,665.1 California Red-Legged Frog – 1,654.7 California Vole – 2,521.4 Coast Horned Lizard – 1,218.2 Cooper's Hawk – 2,474.4 Desert Woodrat – 2,909.2 Ferruginous Hawk – 2,909.2 Golden Eagle – 2,474.4 Lawrence's Goldfinch – 2,798.8 Le Conte's Thrasher – 1,230.3 Mohave Ground Squirrel – 1,230.3 Mountain Plover – 464.3 Northern Harrier – 2,909.2 Pallid Bat – 2,909.2 Prairie Falcon – 2,909.2 Rufous-Crowned Sparrow – 1,678.9 San Joaquin Pocket Mouse – 1,007.0 Silver-Haired Bat – 2,384.8 Southern	Habitat Special-Status Wildlife (CWHR, acres) American Badger – 2,580.1 Arroyo Toad – 899.3 Burrowing Owl – 1,667.8 California Red-Legged Frog – 1,325.5 California Vole – 2,192.4 Coast Horned Lizard – 886.5 Cooper's Hawk – 2,145.3 Desert Woodrat – 2,580.1 Ferruginous Hawk – 2,580.1 Golden Eagle – 2,145.3 Lawrence's Goldfinch – 2,469.7 Le Conte's Thrasher – 1,233.0 Mohave Ground Squirrel – 1,233.0 Mountain Plover – 464.3 Northern Harrier – 2,580.1 Pallid Bat – 2,580.1 Prairie Falcon – 2,580.1 Rufous-Crowned Sparrow – 1,347.1 San Joaquin Pocket Mouse – 1,007.0 Silver-Haired Bat – 2,055.7 Southern Grasshopper Mouse – 2,580.1 Tricolored Blackbird – 1,667.8 Two-Striped Garter Snake – 1,408.5 Western Mastiff Bat – 2,580.1 Western Pond Turtle – 434.8 Western Spadefoot –
	Critical Habitat (acres): Arroyo Toad – 77.5 Coastal California Gnatcatcher – 20.8	Critical Habitat (acres): Arroyo Toad – 78.2 Coastal California Gnatcatcher – 20.8	Critical Habitat (acres): Arroyo Toad – 77.5 Coastal California Gnatcatcher – 20.8	Critical Habitat (acres): Arroyo Toad – 78.2 Coastal California Gnatcatcher – 20.8	Special-Status Wildlife (CWHR, acres) American Badger – 3,766.9 Arroyo Toad – 1,786.8 Burrowing Owl – 5,929.9 California Red-Legged Frog – 2,200.0 California Vole – 3,379.2 Coast Horned Lizard – 1,763.5 Cooper's Hawk – 8,272.5 Desert Woodrat – 3,766.9 Ferruginous Hawk – 10,514.1 Le Conte's Thrasher – 3,688.3 Mohave Ground Squirrel – 1,230.3 Mountain Plover – 1,392.9 Northern Harrier – 10,514.1 Pallid Bat – 3,766.9 Prairie Falcon – 10,514.1 San Joaquin Pocket Mouse – 1,007.0 Silver-Haired Bat – 3,242.5 Southern Grasshopper Mouse – 3,766.9 Two-Striped Garter Snake – 2,596.4 Western Mastiff Bat – 3,766.9 Western Pond Turtle – 1,401.2 Western Spadefoot – 747.2 Western Whiptail – 3,019.8 Yuma Myotis Bat – 2,560.3	Special-Status Wildlife (CWHR, acres) American Badger – 3,512.9 Arroyo Toad – 1,519.7 Burrowing Owl – 5,935.3 California Red-Legged Frog – 1,945.9 California Vole – 3,125.1 Coast Horned Lizard – 1,506.9 Cooper's Hawk – 7,736.9 Desert Woodrat – 3,512.9 Ferruginous Hawk – 9,978.6 Le Conte's Thrasher – 3,693.6 Mohave Ground Squirrel – 1,233.0 Mountain Plover – 1,392.9 Northern Harrier – 9,978.6 Pallid Bat – 3,512.9 Prairie Falcon – 9,978.6 San Joaquin Pocket Mouse – 1,007.0 Silver-Haired Bat – 2,988.4 Southern Grasshopper Mouse – 3,512.9 Two-Striped Garter Snake – 2,341.3 Western Mastiff Bat – 3,512.9 Western Pond Turtle – 1,400.5 Western Spadefoot – 747.2 Western Whiptail – 2,765.7 Yuma Myotis Bat – 2,301.8	Critical Habitat (acres): Arroyo Toad – 15.7 Santa Ana Sucker – 74.6 Southwestern Willow Flycatcher – 87.5 Special-Status Wildlife (CWHR, acres) American Badger – 3,883.3 Arroyo Toad – 1,984.4 Burrowing Owl – 1,896.2 California Red-Legged Frog – 2,397.6 California Vole – 3,495.5 Coast Horned Lizard – 1,961.1 Cooper's Hawk – 3,217.4 Desert Woodrat – 3,883.3 Ferruginous Hawk – 3,883.3 Golden Eagle – 3,217.4 Lawrence's Goldfinch – 3,772.9 Le Conte's Thrasher – 1,230.3 Mohave Ground Squirrel – 1,230.3 Mountain Plover – 464.3 Northern Harrier – 3,883.3 Pallid Bat – 3,883.3 Prairie Falcon – 3,883.3 Rufous-Crowned Sparrow – 2,653.0 San Joaquin Pocket Mouse – 1,007.0 Silver-Haired Bat – 3,358.9 Southern Grasshopper Mouse –	Rivers (acres): 17.6 Reservoirs (acres): 0 Critical Habitat (acres): Arroyo Toad – 15.7 Santa Ana Sucker – 74.6 Southwestern Willow Flycatcher – 87.5 Special-Status Wildlife (CWHR, acres) American Badger – 3,498.5 Arroyo Toad – 1,621.6 Burrowing Owl – 1,863.9 California Red-Legged Frog – 2,047.8 California Vole – 3,111.0 Coast Horned Lizard – 1,608.8 Cooper's Hawk – 2,867.3 Desert Woodrat – 3,498.5 Ferruginous Hawk – 3,498.5 Golden Eagle – 2,867.3 Lawrence's Goldfinch – 3,388.2 Le Conte's Thrasher – 1,232.8 Mohave Ground Squirrel – 1,232.8 Mountain Plover – 464.3 Northern Harrier – 3,883.3 Pallid Bat – 3,883.3 Prairie Falcon – 3,498.5 Rufous-Crowned Sparrow – 2,653.0 San Joaquin Pocket Mouse – 1,007.0 Silver-Haired Bat – 3,358.9 Southern Grasshopper Mouse –	Reservoirs (acres): 0 Critical Habitat (acres): No Impacts to Critical Habitat Special-Status Wildlife (CWHR, acres) American Badger – 2,909.2 Arroyo Toad – 1,241.4 Burrowing Owl – 1,665.1 California Red-Legged Frog – 1,654.7 California Vole – 2,521.4 Coast Horned Lizard – 1,218.2 Cooper's Hawk – 2,474.4 Desert Woodrat – 2,909.2 Ferruginous Hawk – 2,909.2 Golden Eagle – 2,474.4 Lawrence's Goldfinch – 2,798.8 Le Conte's Thrasher – 1,230.3 Mohave Ground Squirrel – 1,230.3 Mountain Plover – 464.3 Northern Harrier – 2,909.2 Pallid Bat – 2,909.2 Prairie Falcon – 2,909.2 Rufous-Crowned Sparrow – 1,678.9 San Joaquin Pocket Mouse – 1,007.0 Silver-Haired Bat – 2,384.8 Southern	Habitat Special-Status Wildlife (CWHR, acres) American Badger – 2,580.1 Arroyo Toad – 899.3 Burrowing Owl – 1,667.8 California Red-Legged Frog – 1,325.5 California Vole – 2,192.4 Coast Horned Lizard – 886.5 Cooper's Hawk – 2,145.3 Desert Woodrat – 2,580.1 Ferruginous Hawk – 2,580.1 Golden Eagle – 2,145.3 Lawrence's Goldfinch – 2,469.7 Le Conte's Thrasher – 1,233.0 Mohave Ground Squirrel – 1,233.0 Mountain Plover – 464.3 Northern Harrier – 2,580.1 Pallid Bat – 2,580.1 Prairie Falcon – 2,580.1 Rufous-Crowned Sparrow – 1,347.1 San Joaquin Pocket Mouse – 1,007.0 Silver-Haired Bat – 2,055.7 Southern Grasshopper Mouse – 2,580.1 Tricolored Blackbird – 1,667.8 Two-Striped Garter Snake – 1,408.5 Western Mastiff Bat – 2,580.1 Western Pond Turtle – 434.8 Western Spadefoot –

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
	Southern Grasshopper Mouse – 6,729.7 Tricolored Blackbird – 4,756.4 Two-Striped Garter Snake – 5,572.4 Western Mastiff Bat – 6,729.7 Western Pond Turtle – 5,553.5 Western Spadefoot – 3,937.5 Western Whiptail – 3,249.7 Yellow Warbler – 5,553.5 Yellow-Breasted Chat – 5,553.5 Yuma Myotis Bat – 5,557.5 Special-Status Wildlife (CNDDDB Occurrences): Coast Horned Lizard Coastal California Gnatcatcher Cooper's Hawk Golden Eagle Least Bell's Vireo Mohave Ground Squirrel Tricolored Blackbird Western Spadefoot Special-Status Plants (CNDDDB Occurrences): Davidson's Bush-Mallow Plummer's Mariposa-Lily Slender Mariposa-Lily Slender-Horned Spineflower	Southern Grasshopper Mouse – 7,126.6 Tricolored Blackbird – 4,754.9 Two-Striped Garter Snake – 5,969.4 Western Mastiff Bat – 7,126.6 Western Pond Turtle – 5,950.5 Western Spadefoot – 4,339.8 Western Whiptail – 3,648.1 Yellow Warbler – 5,950.5 Yellow-Breasted Chat – 5,950.5 Yuma Myotis Bat – 5,954.5 Special-Status Wildlife (CNDDDB Occurrences): Coast Horned Lizard Coastal California Gnatcatcher Cooper's Hawk Golden Eagle Least Bell's Vireo Mohave Ground Squirrel Tricolored Blackbird Western Spadefoot Special-Status Plants (CNDDDB Occurrences): Davidson's Bush-Mallow Plummer's Mariposa-Lily Slender Mariposa-Lily Slender-Horned Spineflower	Southern Grasshopper Mouse – 7,026.0 Tricolored Blackbird – 4,788.0 Two-Striped Garter Snake – 5,863.9 Western Mastiff Bat – 7,026.0 Western Pond Turtle – 5,818.2 Western Spadefoot – 3,937.5 Western Whiptail – 3,546.0 Yellow Warbler – 5,818.2 Yellow-Breasted Chat – 5,818.2 Yuma Myotis Bat – 5,837.9 Special-Status Wildlife (CNDDDB Occurrences): Coast Horned Lizard Coastal California Gnatcatcher Cooper's Hawk Le Conte's Thrasher Least Bell's Vireo Mohave Ground Squirrel Tricolored Blackbird Western Spadefoot Special-Status Plants (CNDDDB Occurrences): Davidson's Bush-Mallow Plummer's Mariposa-Lily Slender Mariposa-Lily Slender-Horned Spineflower	Southern Grasshopper Mouse – 7,422.9 Tricolored Blackbird – 4,786.5 Two-Striped Garter Snake – 6,260.9 Western Mastiff Bat – 7,422.9 Western Pond Turtle – 6,215.2 Western Spadefoot – 4,339.8 Western Whiptail – 3,944.4 Yellow Warbler – 6,215.2 Yellow-Breasted Chat – 6,215.2 Yuma Myotis Bat – 6,234.9 Special-Status Wildlife (CNDDDB Occurrences): Coast Horned Lizard Coastal California Gnatcatcher Cooper's Hawk Le Conte's Thrasher Least Bell's Vireo Mohave Ground Squirrel Tricolored Blackbird Western Spadefoot Special-Status Plants (CNDDDB Occurrences): Davidson's Bush-Mallow Plummer's Mariposa-Lily Slender Mariposa-Lily Slender-Horned Spineflower	Special-Status Wildlife (CNDDDB Occurrences): Big Free-Tailed Bat Coast Horned Lizard Coastal California Gnatcatcher Cooper's Hawk Golden Eagle Hoary Bat Le Conte's Thrasher Least Bell's Vireo Mohave Ground Squirrel Pallid Bat Rosy Boa San Joaquin Pocket Mouse Silvery Legless Lizard Swainson's Hawk Townsend's Big-Eared Bat Tricolored Blackbird Unarmored Threespine Stickleback Special-Status Plants (CNDDDB Occurrences): San Fernando Valley Spineflower Short-Joint Beavertail	Special-Status Wildlife (CNDDDB Occurrences): Big Free-Tailed Bat Coast Horned Lizard Coastal California Gnatcatcher Cooper's Hawk Golden Eagle Hoary Bat Le Conte's Thrasher Least Bell's Vireo Mohave Ground Squirrel Pallid Bat Rosy Boa San Joaquin Pocket Mouse Silvery Legless Lizard Swainson's Hawk Townsend's Big-Eared Bat Tricolored Blackbird Unarmored Threespine Stickleback Special-Status Plants (CNDDDB Occurrences): San Fernando Valley Spineflower Short-Joint Beavertail	3,883.3 Tricolored Blackbird – 1,896.2 Two-Striped Garter Snake – 2,712.7 Western Mastiff Bat – 3,883.3 Western Pond Turtle – 1,377.6 Western Spadefoot – 665.9 Western Whiptail – 3,217.4 Yellow Warbler – 2,653.0 Yellow-Breasted Chat – 1,802.7 Yuma Myotis Bat – 2,676.6 Special-Status Wildlife (CNDDDB Occurrences): Coast Horned Lizard Coastal California Gnatcatcher Cooper's Hawk Golden Eagle Le Conte's Thrasher Least Bell's Vireo Mohave Ground Squirrel Pallid Bat Rosy Boa San Diego Black-Tailed Jackrabbit Santa Ana Sucker Silvery Legless Lizard Townsend's Big-Eared Bat Tricolored Blackbird Western Pond Turtle Special-Status Plants (CNDDDB Occurrences): Short-Joint Beavertail	Silver-Haired Bat – 2,974.3 Southern Grasshopper Mouse – 3,498.5 Tricolored Blackbird – 1,863.9 Two-Striped Garter Snake – 2,327.1 Western Mastiff Bat – 3,498.5 Western Pond Turtle – 1,342.8 Western Spadefoot – 631.2 Western Whiptail – 2,867.3 Yellow Warbler – 2,265.7 Yellow-Breasted Chat – 1,441.6 Yuma Myotis Bat – 2,287.7 Special-Status Wildlife (CNDDDB Occurrences): Arroyo Chub Big Free-Tailed Bat Coast Horned Lizard Coastal California Gnatcatcher Cooper's Hawk Golden Eagle Hoary Bat Le Conte's Thrasher Least Bell's Vireo Mohave Ground Squirrel Pallid Bat Prairie Falcon San Diego Black-Tailed Jackrabbit San Joaquin Pocket Mouse Santa Ana Speckled Dace Santa Ana Sucker Silvery Legless Lizard Swainson's Hawk Townsend's Big-Eared	Grasshopper Mouse – 2,909.2 Tricolored Blackbird – 1,665.1 Two-Striped Garter Snake – 1,738.6 Western Mastiff Bat – 2,909.2 Western Pond Turtle – 434.8 Western Spadefoot – 434.8 Western Whiptail – 2,474.4 Yellow Warbler – 1,678.9 Yellow-Breasted Chat – 1,571.5 Yuma Myotis Bat – 1,702.5 Special-Status Wildlife (CNDDDB Occurrences): Coast Horned Lizard Cooper's Hawk Golden Eagle Le Conte's Thrasher Least Bell's Vireo Mohave Ground Squirrel Tricolored Blackbird Special-Status Plants (CNDDDB Occurrences): No CNDDDB Special-Status Plant Occurrences	434.8 Western Whiptail – 2,145.3 Yellow Warbler – 1,347.1 Yellow-Breasted Chat – 1,245.2 Yuma Myotis Bat – 1,369.1 Special-Status Wildlife (CNDDDB Occurrences): Coast Horned Lizard Cooper's Hawk Golden Eagle Le Conte's Thrasher Least Bell's Vireo Mohave Ground Squirrel Tricolored Blackbird Special-Status Plants (CNDDDB Occurrences): No CNDDDB Special-Status Plant Occurrences

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
								Bat Tricolored Blackbird Unarmored Threespine Stickleback Western Pond Turtle Special-Status Plants (CNDDB Occurrences): Short-Joint Beavertail		
Cultural Resources (Please note that for Cultural Resources there is a potential for both direct and indirect impacts to resources (consisting of archaeological and historic architecture sites) for tunnel and non-tunnel profiles of the alignment alternatives; therefore, the potentially impacted cultural resources were not separated by the tunnel and non-tunnel profiles of the alignment alternatives.)	115 previously recorded Archeological Sites are located within ½ mile of alternative alignment. 66 previously recorded Historic Architectural Sites are located within ½ mile of the alignment. Only 12 of these cultural resources are located within a 100-foot buffer of the approximate centerline; therefore, the majority of the cultural resources are not expected to be adversely affected by the project.	114 previously recorded Archeological Sites are located within ½ mile of alternative alignment. 62 previously recorded Historic Architectural Sites are located within ½ mile of the alignment. Only 12 of these cultural resources are located within a 100-foot buffer of the approximate centerline; therefore, the majority of the cultural resources are not expected to be adversely affected by the project.	120 previously recorded Archeological Sites are located within ½ mile of alternative alignment. 67 previously recorded Historic Architectural Sites are located within ½ mile of the alignment. Only 12 of these cultural resources are located within a 100-foot buffer of the approximate centerline; therefore, the majority of the cultural resources are not expected to be adversely affected by the project.	120 previously recorded Archeological Sites are located within ½ mile of alternative alignment. 65 previously recorded Historic Architectural Sites are located within ½ mile of the alignment. Only 11 of these cultural resources are located within a 100-foot buffer of the approximate centerline; therefore, the majority of the cultural resources are not expected to be adversely affected by the project.	79 previously recorded Archeological Sites are located within ½ mile of alternative alignment. 74 previously recorded Historic Architectural Sites are located within ½ mile of the alignment. Only 15 of these cultural resources are located within a 100-foot buffer of the approximate centerline; therefore, the majority of the cultural resources are not expected to be adversely affected by the project.	77 previously recorded Archeological Sites are located within ½ mile of alternative alignment. 74 previously recorded Historic Architectural Sites are located within ½ mile of the alignment. Only 13 of these cultural resources are located within a 100-foot buffer of the approximate centerline; therefore, the majority of the cultural resources are not expected to be adversely affected by the project.	52 previously recorded Archeological Sites are located within ½ mile of alternative alignment. 50 previously recorded Historic Architectural Sites are located within ½ mile of the alignment. Only 14 of these cultural resources are located within a 100-foot buffer of the approximate centerline; therefore, the majority of the cultural resources are not expected to be adversely affected by the project.	44 previously recorded Archeological Sites are located within ½ mile of alternative alignment. 49 previously recorded Historic Architectural Sites are located within ½ mile of the alignment. Only 4 of these cultural resources are located within a 100-foot buffer of the approximate centerline; therefore, the majority of the cultural resources are not expected to be adversely affected by the project.	51 previously recorded Archeological Sites are located within ½ mile of alternative alignment. 50 previously recorded Historic Architectural Sites are located within ½ mile of the alignment. Only 14 of these cultural resources are located within a 100-foot buffer of the approximate centerline; therefore, the majority of the cultural resources are not expected to be adversely affected by the project.	57 previously recorded Archeological Sites are located within ½ mile of alternative alignment. 52 previously recorded Historic Architectural Sites are located within ½ mile of the alignment. Only 11 of these cultural resources are located within a 100-foot buffer of the approximate centerline; therefore, the majority of the cultural resources are not expected to be adversely affected by the project
Parklands⁵ (Within 100 feet of the alignment)	Non-Tunnel 3.3 acres of parklands (0.8 acres: San Fernando Middle School; 0.001 acres: San Fernando Gateway; 0.9 acres: Roscoe Elementary School; 1.1 acres: R. Rex Parris High	Non-Tunnel 3.3 acres of parklands (0.5 acres: Cesar E. Chavez Memorial; 0.001 acres: San Fernando Gateway; 0.8 acres: San Fernando Middle School; 0.9 acres: Roscoe Elementary	Non-Tunnel 3.3 acres of parklands (0.5 acres: Cesar E. Chavez Memorial; 0.001 acres: San Fernando Gateway; 0.8 acres: San Fernando Middle School; 0.9 acres: Roscoe Elementary	Non-Tunnel 3.3 acres of parklands (0.5 acres: Cesar E. Chavez Memorial; 0.001 acres: San Fernando Gateway; 0.8 acres: San Fernando Middle School; 0.9 acres: Roscoe Elementary	Non-Tunnel 3.5 acres of parklands (1.1 acres: R. Rex Parris High School; 2.4 acres: Soledad Sands Park) 14 bike routes 1 Trail Tunnel 4.9 acres of parklands	Non-Tunnel 3.5 acres of parklands (1.1 acres: R. Rex Parris High School; 2.4 acres: Soledad Sands Park) 13 bike routes 1 Trail Tunnel 4.9 acres of parklands	Non-Tunnel 4.6 acres of parklands (1.1 acres: Gross Park; 1.1 acres: R. Rex Parris High School; 2.4 acres: Soledad Sands Park) 15 bike routes 1 Trail	Non-Tunnel 4.8 acres of parklands (1.3 acres: Gross Park; 1.1 acres: R. Rex Parris High School; 2.4 acres: Soledad Sands Park) 13 bike routes 1 Trail 0.0 acres: Angeles	Non-Tunnel 2.0 acres of parklands (0.9 acres: Gross Park; 1.1 acres: R. Rex Parris High School) 15 bike routes 0 Trail Angeles National	Non-Tunnel 2.0 acres of parklands (0.9 acres: Gross Park; 1.1 acres: R. Rex Parris High School) 14 bike routes 0 Trail Angeles National Forest subtotal: 0 acres

⁵ Potential parkland resources within the Angeles National Forest are yet to be confirmed.

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
	School; 0.5 acres: Cesar E. Chavez Memorial) 32 bike routes 1 Trail <u>Tunnel</u> 50.2 acres of parklands (28.5 acres: Elsmere Canyon Open Space; 19.2 acres: Whitney Canyon Park; 2.5 acres: Fair Oaks Ranch Community School); 1 bike route 3 Trails 0.7 acres: Angeles National Forest	School; 1.1 acres: R. Rex Parris High School) 32 bike routes 1 Trail <u>Tunnel</u> 50.2 acres of parklands (28.5 acres: Elsmere Canyon Open Space; 19.2 acres: Whitney Canyon Park; 2.5 acres: Fair Oaks Ranch Community School); 1 bike route 3 Trails 0.7 acres: Angeles National Forest	School; 1.1 acres: R. Rex Parris High School) 32 bike routes 1 Trail <u>Tunnel</u> 50.2 acres of parklands (28.5 acres: Elsmere Canyon Open Space; 19.2 acres: Whitney Canyon Park; 2.5 acres: Fair Oaks Ranch Community School); 2 bike routes 3 Trails 0.7 acres: Angeles National Forest	School; 1.1 acres: R. Rex Parris High School) 32 bike routes 1 Trail <u>Tunnel</u> 50.2 acres of parklands (28.5 acres: Elsmere Canyon Open Space; 19.2 acres: Whitney Canyon Park; 2.5 acres: Fair Oaks Ranch Community School); 2 bike routes 3 Trails 0.7 acres: Angeles National Forest	(3.2 acres: D. Gonzales Pacoima Recreation Center; 0.8 acres: Pacoima Charter School; 0.9 acres: Roscoe Elementary School); 10 bike routes 3 Trails 336.1 acres: Angeles National Forest subtotal	(3.2 acres: D. Gonzales Pacoima Recreation Center; 0.8 acres: Pacoima Charter School; 0.9 acres: Roscoe Elementary School); 10 bike routes 3 Trails 348.1 acres: Angeles National Forest subtotal	<u>Tunnel</u> 2.0 acres of parklands (2.0 acres: Glenwood Elementary School); 6 bike routes 3 Trails 335.2 acres: Angeles National Forest	National Forest <u>Tunnel</u> 2.0 acres of parklands (2.0 acres: Glenwood Elementary School); 5 bike routes 3 Trails 347.2 acres: Angeles National Forest	Forest subtotal: 0 acres <u>Tunnel</u> 4.7 acres of parklands (4.7 acres: Verdugo Mountain Park); 2 bike routes 6 Trails 372.4 acres: Angeles National Forest	<u>Tunnel</u> 4.7 acres of parklands (4.7 acres: Verdugo Mountain Park); 2 bike routes 6 Trails 381 acres: Angeles National Forest
Agricultural Lands (Within 100 feet of the alignment)	<u>Tunnel</u> 11.9 acres <u>Non-Tunnel</u> 7.9 acres	<u>Tunnel</u> 3.7 acres <u>Non-Tunnel</u> 22.9 acres	<u>Tunnel</u> 11.5 acres <u>Non-Tunnel</u> 3.8 acres	<u>Tunnel</u> 3.4 acres <u>Non-Tunnel</u> 18.8 acres	<u>Tunnel</u> 0.0 acres <u>Non-Tunnel</u> 12.4 acres	<u>Tunnel</u> 0.6 acres <u>Non-Tunnel</u> 13.0 acres	<u>Tunnel</u> 5.8 acres <u>Non-Tunnel</u> 16.4 acres	<u>Tunnel</u> 6.0 acres <u>Non-Tunnel</u> 17.5 acres	<u>Tunnel</u> 1.1 acres <u>Non-Tunnel</u> 9.9 acres	<u>Tunnel</u> 3.9 acres <u>Non-Tunnel</u> 8.3 acres
Demographics, Socioeconomic Composition, and Communities of Environmental Justice Concern	The alignment buffer area (1/2-mile from center of alignment) includes portions of 59 Census tracts. 5 Census tracts are within Tunnel and 54 Census tracts are within Non-Tunnel section. <u>Tunnel</u> 5 CTs/59 Total CTs Demographics & Socioeconomic Composition (Percentages are LA County Average for that metric) 1 CT ≥ 71% minority 1 CT ≥ 11% Elderly Pop 0 CTs ≥ 27% LEP 1 CT ≥ 16% Poverty				The alignment buffer area (1/2-mile from center of alignment) includes portions of 44 Census tracts. 24 Census tracts are within Tunnel and 20 Census tracts are within Non-Tunnel section. <u>Tunnel</u> 24 CTs/44 Total CTs Demographics & Socioeconomic Composition (Percentages are LA County Average for that metric) 23 CTs ≥ 71% minority 3 CTs ≥ 11% Elderly Pop 9 CTs ≥ 27% LEP 19 CTs ≥ 16% Poverty		The alignment buffer area (1/2-mile from center of alignment) includes portions of 32 Census tracts. 11 Census tracts are within Tunnel and 21 Census tracts are within Non-Tunnel section. <u>Tunnel</u> 11 CTs/32 Total CTs Demographics & Socioeconomic Composition (Percentages are LA County Average for that metric) 6 CTs ≥ 71% minority 5 CTs ≥ 11% Elderly Pop 2 CTs ≥ 27% LEP 8 CTs ≥ 16% Poverty		The alignment buffer area (1/2-mile from center of alignment) includes portions of 27 Census tracts. 6 Census tracts are within Tunnel and 21 Census tracts are within Non-Tunnel section. <u>Tunnel</u> 6 CTs/27 Total CTs Demographics & Socioeconomic Composition (Percentages are LA County Average for that metric) 2 CTs ≥ 71% minority 4 CTs ≥ 11% Elderly Pop 1 CT ≥ 27% LEP 3 CTs ≥ 16% Poverty	
	Identification of communities of EJ concern where the alignments are within tunnel:									
	Although there are CTs that have EJ populations above tunnel sections, effects related to construction/operation of tunnel sections are not likely to be disproportionately borne by EJ populations because tunnel sections are spread throughout all communities (with the assumption that construction methods are the same throughout). Therefore, identification of communities of EJ concern is not required. For this analysis, portal entrances are considered non-tunnel portions and would be captured in the non-tunnel analysis below.									
	<u>Non-Tunnel</u> 54 CTs/59 Total CTs				<u>Non-Tunnel</u> 20 CTs/44 Total CTs		<u>Non-Tunnel</u> 21 CTs/32 Total CTs		<u>Non-Tunnel</u> 21 CTs/27 Total CTs	

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor																																																																																																																																																																																																																																																												
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b																																																																																																																																																																																																																																																							
	Demographics & Socioeconomic Composition <i>(Percentages are LA County Average for that metric)</i> 39 CTs ≥ 71% minority 14 CTs ≥ 11% Elderly Pop 10 CTs ≥ 27% LEP 33 CTs ≥ 16% Poverty				Demographics & Socioeconomic Composition <i>(Percentages are LA County Average for that metric)</i> 11 CTs ≥ 71% minority 10 CTs ≥ 11% Elderly Pop 0 CTs ≥ 27% LEP 11 CTs ≥ 16% Poverty		Demographics & Socioeconomic Composition <i>(Percentages are LA County Average for that metric)</i> 9 CTs ≥ 71% minority 12 CTs ≥ 11% Elderly Pop 0 CTs ≥ 27% LEP 11 CTs ≥ 16% Poverty		Demographics & Socioeconomic Composition <i>(Percentages are LA County Average for that metric)</i> 9 CTs ≥ 71% minority 12 CTs ≥ 11% Elderly Pop 0 CTs ≥ 27% LEP 11 CTs ≥ 16% Poverty																																																																																																																																																																																																																																																								
	Communities of Potential Environmental Justice Concern⁶ <i>For all four SR 14 alignments.</i> Based on Census data, there are 49 net Non-Tunnel CTs in that are considered communities of EJ concern because they contain one or more EJ populations greater than or equal to LA County thresholds: <table><tr><th colspan="5">Burbank (7 CTs)</th></tr><tr><th>CTs</th><th>M</th><th>P</th><th>E</th><th>L</th></tr><tr><td>5</td><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr></table> <table><tr><th colspan="5">County of LA (1 CT)</th></tr><tr><th>CTs</th><th>M</th><th>P</th><th>E</th><th>L</th></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr></table> <table><tr><th colspan="5">Pacoima/Sun Valley (21 CTs)</th></tr><tr><th>CTs</th><th>M</th><th>P</th><th>E</th><th>L</th></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr><tr><td>2</td><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr><tr><td>7</td><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr><tr><td>8</td><td></td><td></td><td></td><td></td></tr></table> <table><tr><th colspan="5">Palmdale (9 CTs)</th></tr><tr><th>CTs</th><th>M</th><th>P</th><th>E</th><th>L</th></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr><tr><td>6</td><td></td><td></td><td></td><td></td></tr><tr><td>2</td><td></td><td></td><td></td><td></td></tr></table>				Burbank (7 CTs)					CTs	M	P	E	L	5					1					1					County of LA (1 CT)					CTs	M	P	E	L	1					Pacoima/Sun Valley (21 CTs)					CTs	M	P	E	L	1					1					2					1					7					1					8					Palmdale (9 CTs)					CTs	M	P	E	L	1					6					2					Communities of Potential Environmental Justice Concern Based on Census data, there are 18 net CTs that are considered communities of EJ concern because they contain one or more EJ populations greater than or equal to LA County thresholds: <table><tr><th colspan="5">Burbank (7 CTs)</th></tr><tr><th>CTs</th><th>M</th><th>P</th><th>E</th><th>L</th></tr><tr><td>4</td><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr></table> <table><tr><th colspan="5">Pacoima/Sun Valley (2 CTs)</th></tr><tr><th>CTs</th><th>M</th><th>P</th><th>E</th><th>L</th></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr></table> <table><tr><th colspan="5">Palmdale (9 CTs)</th></tr><tr><th>CTs</th><th>M</th><th>P</th><th>E</th><th>L</th></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr><tr><td>6</td><td></td><td></td><td></td><td></td></tr><tr><td>2</td><td></td><td></td><td></td><td></td></tr></table> In addition, the following geography is identified as a community of EJ concern due to its settlement history or significance to any EJ population: <ul style="list-style-type: none">City of LA Pacoima NeighborhoodCity of LA Sylmar Neighborhood		Burbank (7 CTs)					CTs	M	P	E	L	4					1					1					1					Pacoima/Sun Valley (2 CTs)					CTs	M	P	E	L	1					1					Palmdale (9 CTs)					CTs	M	P	E	L	1					6					2					Communities of Potential Environmental Justice Concern Based on Census data, there are 19 net CTs that are considered communities of EJ concern because they contain one or more EJ populations greater than or equal to LA County thresholds: <table><tr><th colspan="5">Burbank (9 CTs)</th></tr><tr><th>CTs</th><th>M</th><th>P</th><th>E</th><th>L</th></tr><tr><td>7</td><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr></table> <table><tr><th colspan="5">Palmdale (9 CTs)</th></tr><tr><th>CTs</th><th>M</th><th>P</th><th>E</th><th>L</th></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr><tr><td>6</td><td></td><td></td><td></td><td></td></tr><tr><td>2</td><td></td><td></td><td></td><td></td></tr></table> <table><tr><th colspan="5">Sylmar (1 CT)</th></tr><tr><th>CTs</th><th>M</th><th>P</th><th>E</th><th>L</th></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr></table> In addition, the following geography is identified as a community of EJ concern due to its settlement history or significance to any EJ population: <ul style="list-style-type: none">City of LA Pacoima Neighborhood		Burbank (9 CTs)					CTs	M	P	E	L	7					1					1					Palmdale (9 CTs)					CTs	M	P	E	L	1					6					2					Sylmar (1 CT)					CTs	M	P	E	L	1			
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Community Resources Potentially Significant to	The alignment buffer area (1/2-mile from center of alignment) contains:	The alignment buffer area (1/2-mile from center of alignment) contains:	The alignment buffer area (1/2-mile from center of alignment) contains:	The alignment buffer area (1/2-mile from center of alignment) contains:	The alignment buffer area (1/2-mile from center of alignment) contains: Tunnel	The alignment buffer area (1/2-mile from center of alignment) contains:	The alignment buffer area (1/2-mile from center of alignment) contains:	The alignment buffer area (1/2-mile from center of alignment) contains:	The alignment buffer area (1/2-mile from center of alignment) contains: Tunnel																																																																																																																																																																																																																																																								

⁶ Definitions of table data are as follows: CTs = Census Tracts; M = Minority; P = Poverty; E = Elderly; L = LEP.

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
Communities of Environmental Justice Concern ⁷	<u>Tunnel</u> <ul style="list-style-type: none">• 3 Churches• 0 Government Facilities• 4 Schools <u>Non-Tunnel</u> <ul style="list-style-type: none">• 81 Churches• 36 Government Facilities• 36 Schools	<u>Tunnel</u> <ul style="list-style-type: none">• 1 Church• 0 Government Facilities• 2 Schools <u>Non-Tunnel</u> <ul style="list-style-type: none">• 83 Churches• 36 Government Facilities• 38 Schools	<u>Tunnel</u> <ul style="list-style-type: none">• 3 Churches• 0 Government Facilities• 5 Schools <u>Non-Tunnel</u> <ul style="list-style-type: none">• 81 Churches• 36 Government Facilities• 36 Schools	<u>Tunnel</u> <ul style="list-style-type: none">• 1 Churches• 0 Government Facilities• 3 Schools <u>Non-Tunnel</u> <ul style="list-style-type: none">• 83 Churches• 36 Government Facilities• 38 Schools	<ul style="list-style-type: none">• 26 Churches• 4 Government Facilities• 17 Schools <u>Non-Tunnel</u> <ul style="list-style-type: none">• 39 Churches• 14 Government Facilities• 19 Schools		<u>Tunnel</u> <ul style="list-style-type: none">• 14 Churches• 0 Government Facilities• 5 Schools <u>Non-Tunnel</u> <ul style="list-style-type: none">• 42 Churches• 16 Government Facilities• 16 Schools	<u>Tunnel</u> <ul style="list-style-type: none">• 16 Churches• 0 Government Facilities• 5 Schools <u>Non-Tunnel</u> <ul style="list-style-type: none">• 40 Churches• 16 Government Facilities• 16 Schools	<ul style="list-style-type: none">• 5 Churches• 0 Government Facilities• 4 Schools <u>Non-Tunnel</u> <ul style="list-style-type: none">• 41 Churches• 17 Government Facilities• 18 Schools	
Displacement of Community Resources Potentially Significant to Communities of Environmental Justice Concern ⁸	The following community resources are located within the 100-feet from center of alignment and would be potentially displaced. <u>Tunnel</u> <ul style="list-style-type: none">• 1 Church• 0 Government Facilities• 1 School• 4 Parks• 1 Bike Route <u>Non-Tunnel</u> <ul style="list-style-type: none">• 2 Churches• 0 Government Facilities• 1 School• 6 Parks• 32 Bike Routes	The following community resources are located within the 100-feet from center of alignment and would be potentially displaced. <u>Tunnel</u> <ul style="list-style-type: none">• 0 Churches• 0 Government Facilities• 1 School• 4 Parks• 1 Bike Route <u>Non-Tunnel</u> <ul style="list-style-type: none">• 2 Churches• 0 Government Facilities• 1 School• 6 Parks• 32 Bike Routes	The following community resources are located within the 100-feet from center of alignment and would be potentially displaced. <u>Tunnel</u> <ul style="list-style-type: none">• 1 Church• 0 Government Facilities• 1 School• 4 Parks• 2 Bike Routes <u>Non-Tunnel</u> <ul style="list-style-type: none">• 2 Churches• 0 Government Facilities• 1 School• 6 Parks• 32 Bike Routes	The following community resources are located within the 100-feet from center of alignment and would be potentially displaced. <u>Tunnel</u> <ul style="list-style-type: none">• 0 Churches• 0 Government Facilities• 1 School• 4 Parks• 2 Bike Routes <u>Non-Tunnel</u> <ul style="list-style-type: none">• 2 Churches• 0 Government Facilities• 1 School• 6 Parks• 32 Bike Routes	The following community resources are located within the 100-feet from center of alignment and would be potentially displaced. <u>Tunnel</u> <ul style="list-style-type: none">• 2 Churches• 0 Government Facility• 2 Schools• 4 Parks• 10 Bike Routes <u>Non-Tunnel</u> <ul style="list-style-type: none">• 3 Churches• 0 Government Facilities• 1 School• 3 Parks• 14 Bike Routes		The following community resources are located within the 100-feet from center of alignment and would be potentially displaced. <u>Tunnel</u> <ul style="list-style-type: none">• 0 Churches• 0 Government Facilities• 2 Schools• 2 Park• 6 Bike Routes <u>Non-Tunnel</u> <ul style="list-style-type: none">• 2 Churches• 0 Government Facilities• 1 School• 3 Parks• 15 Bike Routes	The following community resources are located within the 100-feet from center of alignment and would be potentially displaced. <u>Tunnel</u> <ul style="list-style-type: none">• 0 Churches• 0 Government Facilities• 2 Schools• 2 Parks• 5 Bike Routes <u>Non-Tunnel</u> <ul style="list-style-type: none">• 2 Churches• 0 Government Facilities• 1 School• 3 Parks• 13 Bike Routes	The following community resources are located within the 100-feet from center of alignment and would be potentially displaced. <u>Tunnel</u> <ul style="list-style-type: none">• 0 Churches• 0 Government Facilities• 0 Schools• 2 Parks• 2 Bike Routes <u>Non-Tunnel</u> <ul style="list-style-type: none">• 2 Churches• 0 Government Facilities• 1 School• 2 Parks• 15 Bike Routes	The following community resources are located within the 100-feet from center of alignment and would be potentially displaced. <u>Tunnel</u> <ul style="list-style-type: none">• 0 Churches• 0 Government Facilities• 0 Schools• 2 Parks• 2 Bike Routes <u>Non-Tunnel</u> <ul style="list-style-type: none">• 2 Churches• 0 Government Facilities• 1 School• 2 Parks• 14 Bike Routes

⁷ The Community Resources listed here are inclusive of all community resources within the alignment buffer area along the full length of the alignment. Community resources outside CTs identified as potential communities of EJ concern may still be potentially significant to potential communities of EJ concern. In addition, further analysis may identify additional potential communities of EJ concern, who may view these community resources as potentially significant.

⁸ The Community Resources listed here are inclusive of all community resources within the alignment buffer area along the full length of the alignment, as community resources outside CTs identified as potential communities of EJ concern may still be potentially significant to potential communities of EJ concern. In addition, further analysis may identify additional potential communities of EJ concern, which may view these community resources as potentially significant.

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
Noise and Vibration	<p><u>Tunnel</u> Within 300 feet from the centerline of alignment</p> <p>Residential – 581 Church – 1 Studio – 1</p> <p><u>Non-Tunnel</u> Within 2,500 feet from the centerline of alignment</p> <p>Residential - 19,334 Animal Kennel – 1 Cemetery - 1 Church – 48 Clubs, Lodge Halls, Fraternal Orgs – 12 Day Care - 5 Hospital – 2 Hotel – 9 Library - 2 Park - 25 School - 47 Studio – 10</p>	<p><u>Tunnel</u> Within 300 feet from the centerline of alignment</p> <p>Residential – 434 Studio – 1</p> <p><u>Non-Tunnel</u> Within 2,500 feet from the centerline of alignment</p> <p>Residential - 20,439 Animal Kennel – 1 Cemetery - 1 Church – 51 Clubs, Lodge Halls, Fraternal Orgs – 12 Day Care - 5 Hospital – 2 Hotel – 9 Library - 2 Park - 25 School – 49 Studio – 10</p>	<p><u>Tunnel</u> Within 300 feet from the centerline of alignment</p> <p>Residential – 733 Church – 1 Studio – 1</p> <p><u>Non-Tunnel</u> Within 2,500 feet from the centerline of alignment</p> <p>Residential - 19,570 Animal Kennel – 1 Cemetery - 1 Church – 48 Clubs, Lodge Halls, Fraternal Orgs – 12 Day Care - 5 Hospital – 2 Hotel – 9 Library - 2 Park - 25 School – 48 Studio – 10</p>	<p><u>Tunnel</u> Within 300 feet from the centerline of alignment</p> <p>Residential – 586 Studio – 1</p> <p><u>Non-Tunnel</u> Within 2,500 feet from the centerline of alignment</p> <p>Residential - 20,675 Animal Kennel – 1 Cemetery - 1 Church – 51 Clubs, Lodge Halls, Fraternal Orgs – 12 Day Care - 5 Hospital – 2 Hotel – 9 Library - 2 Park - 25 School – 50 Studio – 10</p>	<p><u>Tunnel</u> Within 300 feet from the centerline of alignment</p> <p>Residential – 930 Church – 4 Clubs, Lodge Halls, Fraternal Orgs - 1 Day Care - 1 Hospital - 1 School – 3</p> <p><u>Non-Tunnel</u> Within 2,500 feet from the centerline of alignment</p> <p>Residential – 6,609 Cemetery - 1 Church – 14 Clubs, Lodge Halls, Fraternal Orgs – 2 Hospital – 1 Library - 1 Park - 5 School – 8</p>	<p><u>Tunnel</u> Within 300 feet from the centerline of alignment</p> <p>Residential – 921 Church – 4 Clubs, Lodge Halls, Fraternal Orgs - 1 Day Care - 1 Hospital - 1 School – 3</p> <p><u>Non-Tunnel</u> Within 2,500 feet from the centerline of alignment</p> <p>Residential - 6,598 Cemetery - 1 Church - 14 Clubs, Lodge Halls, Fraternal Orgs - 2 Hospital - 1 Library - 1 Park - 5 School - 8</p>	<p><u>Tunnel</u> Within 300 feet from the centerline of alignment</p> <p>Residential – 262 Hotel – 1 School – 1 Studio – 1</p> <p><u>Non-Tunnel</u> Within 2,500 feet from the centerline of alignment</p> <p>Residential – 6,287 Animal Kennel – 2 Cemetery - 1 Church – 16 Clubs, Lodge Halls, Fraternal Orgs – 1 Day Care - 1 Hotel - 4 Library - 1 Park - 9 School – 18 Studio - 10</p>	<p><u>Tunnel</u> Within 300 feet from the centerline of alignment</p> <p>Residential – 685 Animal Kennel – 1 Church – 3 Hotel - 1 School – 1 Studio - 2</p> <p><u>Non-Tunnel</u> Within 2,500 feet from the centerline of alignment</p> <p>Residential – 6,071 Animal Kennel - 2 Cemetery - 1 Church - 16 Clubs, Lodge Halls, Fraternal Orgs - 1 Day Care - 1 Hotel - 4 Library - 1 Park - 8 School - 15 Studio - 7</p>	<p><u>Tunnel</u> Within 300 feet from the centerline of alignment</p> <p>Residential – 329 Hotel – 1 Studio – 3</p> <p><u>Non-Tunnel</u> Within 2,500 feet from the centerline of alignment</p> <p>Residential – 5,727 Cemetery - 1 Church – 16 Clubs, Lodge Halls, Fraternal Orgs – 1 Day Care - 1 Hotel - 4 Library - 1 Park - 9 School – 18 Studio - 9</p>	<p><u>Tunnel</u> Within 300 feet from the centerline of alignment</p> <p>Residential – 331 Hotel – 1 Studio – 3</p> <p><u>Non-Tunnel</u> Within 2,500 feet from the centerline of alignment</p> <p>Residential – 5,708 Cemetery - 1 Church – 16 Clubs, Lodge Halls, Fraternal Orgs – 1 Day Care - 1 Hotel - 4 Library - 1 Park - 9 School – 18 Studio - 9</p>
<p>Change in Visual and Scenic Resources</p> <p><u>Visual Character:</u> The most potential for impacts to visual character is where the alignment has a high vertical profile such as viaduct.</p> <p><u>Views and Vistas:</u> The presence of viaducts in the vicinity of areas with views and vistas would have the potential for adverse impacts.</p>	<p>Potential visual impacts associated with the SR14 Corridor alignment alternatives are similar throughout the study area. This assessment focuses on a comparative analysis of areas where the four alignment alternatives diverge most in terms of 1) the location of the centerline -- where one alternative might be closer to a sensitive visual resource than another, and 2) the proposed track type (viaduct, at-grade, or tunnel). For this analysis area, sensitive viewers are assumed to be residents and recreators. Therefore, residential areas and recreation sites and facilities within the project area represent sensitive viewing locations.</p> <p>This preliminary analysis uses two indicators for gauging potential impacts to individual views and vistas along the SR14 Corridor:</p> <ol style="list-style-type: none"> 1) Percent visible. This is the percentage of the alignment alternative that is above ground versus tunneled. A higher percent visible corresponds to a higher potential impact to visual resources. Greater proportion of visible track type indicates the alternative has a higher probability to be seen, and that the design of the structure could contrast with surrounding visual character. 2) Sensitive Viewing Locations where the Project would be visible: Residential areas and recreation sites are assumed to be sensitive viewing locations for the proposed project. Sensitive viewing locations in areas where the alignment would be tunneled were not considered, since the alignment is assumed to not be visible in this location. It should be noted that all SR14 Corridor alternatives would be tunneled (not visible) in the vicinity of the Angeles National Forest. <p>Photosimulations should be used to verify this preliminary impact assessment in future</p>				<p>Potential visual impacts associated with the East Corridor alignment alternatives would be similar throughout the study area. This assessment focuses on a comparative analysis of areas where the four alignment alternatives diverge most in terms of 1) the location of the centerline -- where one alternative might be closer to a sensitive visual resource than another, and 2) the proposed track type (viaduct, at-grade, trench, or tunnel). For this analysis area, sensitive viewers are assumed to be residents and recreators. Therefore, residential areas and recreation sites and facilities within the vicinity of the project represent sensitive viewing locations.</p> <p>This preliminary analysis uses two indicators for gauging potential impacts to individual views and vistas along the East Corridor:</p> <ol style="list-style-type: none"> 1) Percent visible. This is the percentage of the alignment alternative that is above ground versus tunneled. A higher percent visible corresponds to a higher potential impact to visual resources. Greater proportion of visible track type indicates the alternative has a higher probability to be seen, and that the design of a structure could contrast with surrounding visual character. 2) Sensitive Viewing Locations where the Project would be visible: Residential areas and recreation sites are assumed to be sensitive viewing locations for the proposed project. Sensitive viewing locations in areas where the alignment would be tunneled were not considered, since the alignment is assumed to not be visible in this location. <p>Photosimulations should be used to verify this preliminary impact assessment in future environmental analysis. Below is a summary of the potential visual impacts from each of the four alternatives considered in this analysis.</p> <p>E1a – Approximately 38% would be visible. E1a would have the same alignment and track type as all of the East Corridor alignments in the vicinity of the City of Palmdale. E1a and E1b would have the highest percentage of cut and cover track type through the community of Sun Valley. E1a and E1b share the most similar centerline configuration and only diverge south of Palmdale near Acton. Where the two diverge, E1a would have slightly more visibility due to the extent of trenched and viaduct track type (compared only to E1b).</p> <p>E1b – Approximately 35% would be visible. It would have the same alignment and track type as all of the East Corridor alignments in the vicinity of</p>					

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
	<p>environmental analysis. Below is a summary of the potential visual impacts from each of the four alternatives considered in this analysis.</p> <p>SR14-1 – Approximately 57% would be visible. It would have the same alignment and track type as SR14-3 in the vicinity of the Robinson Ranch Golf Club. Just northeast of Agua Dulce Road, SR14-1 and SR14-2 would have approximately 0.5-mile more track on viaduct than SR14-3 and SR14-4 (but overall SR14-1 would have the least amount of visible track). This area is along mostly undeveloped, hilly terrain, likely resulting in higher contrast than in urban areas. This portion of the alignment would be visible from SR14. SR14-1, SR14-2, SR14-3, and SR14-4 would all have track visible from the Pacific Crest Trail. Near Acton, SR14-1 would be further from the community of Acton and also have less visible track than SR14-3 and SR14-4. SR14-1 would have the least potential for impacts to visual resources because it would have the least amount of visible track and also have the least visibility from Robinson Ranch Golf Club, travelers on SR14, and the community of Acton.</p> <p>SR14-2 – Approximately 61% would be visible. It would have the same alignment and track type as SR14-1 except in the vicinity of the Robinson Ranch Golf Club. SR14-2 and SR 14-4 would have similar alignments and track type in this area which would have more track on viaduct than SR14-1 and SR14-3. SR14-1 and SR14-2 would be furthest from the community of Acton and have the same amount of visible track type here. As a result, potential impacts to the visual character in the vicinity of the community of Acton would be less than SR14-2 and SR14-4. SR14-2 would have more visible track than SR14-3, however, SR14-3 would be more visible by SR14 travelers and the community of Acton.</p> <p>SR14-3 – Approximately 60% would be visible. This alternative is slightly closer than SR14-2 and SR14-4 to the Robinson Ranch Golf Club and residential area to the west of the golf club. However, the difference is minimal (approximately 0.1-mile). The track type of SR14-3 in this location would be at-grade until the end of Whitewater Canyon Road where it would transition to a tunnel. Views of the alignment in this area would be partially blocked by terrain separating the track from the golf course. Where the alignment alternatives diverge near Acton, SR14-3 would have more visible track and be closer to the community of Acton than SR14-1 and SR14-2. The surrounding landscape is rural and residential. SR14-2 would have more visible track than SR14-3; however SR14-3 would be more visible by SR14 travelers and the community of Acton.</p> <p>SR14-4 – Approximately 63% of SR14-4 would be visible. SR14-4 would have more track on viaduct near the Robinson Ranch Golf Club than SR14-1 and SR14-3, making it more likely to be visible from the golf course. SR14-4 would have the same alignment and track type as SR14-3 just northeast of Agua Dulce Canyon Road and near Acton, so potential visual impacts to visual resources would be the same as SR14-3 in those two areas. SR14-4 would have the highest potential for impacts to visual resources because it has the highest percentage of visible track and also would be likely more visible from the Robinson Ranch Golf Club, travelers along SR14, and the community of Acton.</p> <p>Although SR14-1 has a greater amount of viaduct track just northeast of Agua Dulce Road than SR14-3 and SR14-4, SR14-1 has least probable potential for adverse impacts to existing visual character because it is further from the community of Acton than SR14-3 and SR14-4 and it is tunneled in the vicinity of the Robinson Ranch Golf Club where SR14-2 and SR14-4 are on visible track.</p>				<p>the City of Palmdale, but the alignment would be further east of E1a southeast of the Acton area. A larger proportion of E1b would be tunnel or trenched in this area as compared to E1a, thus contributing to the lower overall percentage of visible track than E1a. The visible track in the Acton area travels through areas of similar existing visual character, so there are no high priority differences between views of either proposed track alignments. Both E1a and E1b would be tunneled within the boundaries of the Angeles National Forest, and both would share similar centerline and track types within developed areas of Burbank. Both E1a and E1b would have less visible track type in the developed areas of the LA Basin, particularly compared to E2a.</p> <p>E2a – Approximately 43% would be visible, which is the most of any of the East Corridor Alternatives. It would have the same alignment and track type as all of the East Corridor alignments in the vicinity of the City of Palmdale. E2a and E2b would be visible to residences of Lake View Terrace and have potential to be visible to residences and recreators at Hansen Dam Recreation Center and Orcas Park. E2a would have the largest proportion of visible track type in and around the Hansen Dam Recreation Center, and therefore has greater potential to contrast with existing visual character compared to all other alternatives that share similar track types through similar geographies.</p> <p>E2b – Approximately 39% would be visible. It would have the same alignment and track type as all of the East Corridor alignments in the vicinity of the City of Palmdale. E2b would have a similar track type and alignment centerline configuration as E2a, though a greater proportion of E2a would not be tunneled. Therefore, E2b has slightly less potential to contrast with visual character than E2a.</p> <p>E3a – Approximately 34% would be visible. It would have the same alignment and track type as all of the East Corridor alignments in the vicinity of the City of Palmdale, up until approximately 0.2 mile south of Kentucky Springs Road where the E3a alignment is situated east from E1a and E2a as it enters the Angeles National Forest. E3a and E3b would not be visible within the Angeles National Forest. E3a and E3b would travel along the same alignment centerline with the same visible profile with shared existing visual character when emerging from the tunneled portions just east of Interstate 5. Impacts to the visual character in this urbanized industrial area would be similar to those of E2a and E3b because both would traverse areas of shared similar visual character.</p> <p>E3b – Approximately 30% would be visible. It would have the same alignment and track type as all of the East Corridor alignments in the vicinity of the City of Palmdale, up until where the alignment crosses E. Barrel Springs Road. E3b would have the least proportion of visible track type, and shares similar visibility to all other proposed alternatives in the areas that would require visible track type. Therefore, it is likely that E3b has the least potential to contrast with the existing visual character.</p> <p>Alignment E3b has the least probable potential for adverse impacts to existing visual character because it has the least amount of total visible track and the visible portion of the track easily fits in with the existing urban landscape.</p>					
Geological and Soil Constraints Geotechnical Constraints	<ul style="list-style-type: none">Cumulative tunnel length of 20.7 miles1.8 miles of the	<ul style="list-style-type: none">Cumulative tunnel length of 18.9 miles2.5 miles of the	<ul style="list-style-type: none">Cumulative tunnel length of 20.0 miles1.8 miles of the	<ul style="list-style-type: none">Cumulative tunnel length of 18.2 miles2.2 miles of the	<ul style="list-style-type: none">Cumulative tunnel length of 20.2 4miles.0.5 miles of the	<ul style="list-style-type: none">Cumulative tunnel length of 21.7 miles0.6 miles of the	<ul style="list-style-type: none">Cumulative tunnel length of 19.4 miles.0.6 miles of the	<ul style="list-style-type: none">Cumulative tunnel length of 23.1 miles0.7 miles of the	<ul style="list-style-type: none">Cumulative tunnel length of 21.0 miles.0.2 miles of the	<ul style="list-style-type: none">Cumulative tunnel length of 22.8 miles0.3 miles of the Alternative's non-

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
	<p>Alternative's non-tunnel reaches, and 4.2 miles of tunnel reaches are within 150 feet of CGS landslide hazard zones or historical landslide zones. Landslide hazards may impact at-grade, elevated structures, trenches and portals.</p> <ul style="list-style-type: none">6.4 miles of the Alternative's non-tunnel reach and 2.6 miles of tunnel reach are located within a liquefaction hazard zone. Tunnels are expected to be either in bedrock or below the liquefiable soil zone. However, this should be confirmed following subsurface studies.6.6 miles of non-tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone. 0.25 miles of tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone.1.3 miles are in Alquist-Priolo Earthquake Fault	<p>Alternative's non-tunnel reaches, and 6.4 miles of tunnel reaches are within 150 feet of CGS landslide hazard zones or historical landslide zones. Landslide hazards may impact at-grade, elevated structures, trenches and portals.</p> <ul style="list-style-type: none">6.7 miles of the Alternative's non-tunnel reach and 1.3 miles of tunnel reach are located within a liquefaction hazard zone. Tunnels are expected to be either in bedrock or below the liquefiable soil zone. However, this should be confirmed following subsurface studies.6.6 miles of non-tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone. 0.25 miles of tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone.1.3 miles are in Alquist-Priolo Earthquake Fault	<p>Alternative's non-tunnel reaches, and 4.2 miles of tunnel reaches are within 150 feet of CGS landslide hazard zones or historical landslide zones. Landslide hazards may impact at-grade, elevated structures, trenches and portals.</p> <ul style="list-style-type: none">6.5 miles of the Alternative's non-tunnel reach and 2.6 miles of tunnel reach are located within a liquefaction hazard zone. Tunnels are expected to be either in bedrock or below the liquefiable soil zone. However, this should be confirmed following subsurface studies.6.6 miles of non-tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone. 0.25 miles of tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone.1.8 miles are in Alquist-Priolo Earthquake Fault	<p>Alternative's non-tunnel reaches, and 5.3 miles of tunnel reaches are within 150 feet of CGS landslide hazard zones or historical landslide zones. Landslide hazards may impact at-grade, elevated structures, trenches and portals.</p> <ul style="list-style-type: none">7.0 miles of the Alternative's non-tunnel reach and 1.3 miles of tunnel reach are located within a liquefaction hazard zone. Tunnels are expected to be either in bedrock or below the liquefiable soil zone. However, this should be confirmed following subsurface studies.6.6 miles of non-tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone. 0.25 miles of tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone.1.3 miles are in Alquist-Priolo Earthquake Fault	<p>Alternative's non-tunnel reaches, and 3.6 miles of tunnel reaches are within 150 feet of CGS landslide hazard zones or historical landslide zones. Landslide hazards may impact at-grade, elevated structures, trenches and portals.</p> <ul style="list-style-type: none">3.4 miles of the Alternative's non-tunnel reach and 0.1 miles of tunnel reach are located within a liquefaction hazard zone. Tunnels are expected to be either in bedrock or below the liquefiable soil zone. However, this should be confirmed following subsurface studies.3.7 miles of non-tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone. 3.4 miles of tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone.1.5 miles are in Alquist-Priolo Earthquake Fault	<p>Alternative's non-tunnel reaches, and 4.8 miles of tunnel reaches are within 150 feet of CGS landslide hazard zones or historical landslide zones. Landslide hazards may impact at-grade, elevated structures, trenches and portals.</p> <ul style="list-style-type: none">3.2 miles of the Alternative's non-tunnel reach and 0.03 miles of tunnel reach are located within a liquefaction hazard zone. Tunnels are expected to be either in bedrock or below the liquefiable soil zone. However, this should be confirmed following subsurface studies.3.3 miles of non-tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone. 3.2 miles of tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone.1.5 miles are in Alquist-Priolo Earthquake Fault	<p>Alternative's non-tunnel reaches, and 2.3 miles of tunnel reaches are within 150 feet of CGS landslide hazard zones or historical landslide zones. Landslide hazards may impact at-grade, elevated structures, trenches and portals.</p> <ul style="list-style-type: none">4.1 miles of the Alternative's non-tunnel reach and 0.46 miles of tunnel reach are located within a liquefaction hazard zone. Tunnels are expected to be either in bedrock or below the liquefiable soil zone. However, this should be confirmed following subsurface studies.0.0 miles of non-tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone. 1.9 miles of tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone.1.1 miles are in Alquist-Priolo Earthquake Fault	<p>Alternative's non-tunnel reaches, and 3.7 miles of tunnel reaches are within 150 feet of CGS landslide hazard zones or historical landslide zones. Landslide hazards may impact at-grade, elevated structures, trenches and portals.</p> <ul style="list-style-type: none">4.0 miles of the Alternative's non-tunnel reach and 0.4 miles of tunnel reaches are located within a liquefaction hazard zone. Tunnels are expected to be either in bedrock or below the liquefiable soil zone. However, this should be confirmed following subsurface studies.0.0 miles of non-tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone. 3.3 miles of tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone.1.1 miles are in Alquist-Priolo	<p>Alternative's non-tunnel reaches, and 3.3 miles of tunnel reaches are within 150 feet of CGS landslide hazard zones or historical landslide zones. Landslide hazards may impact at-grade, elevated structures, trenches and portals.</p> <ul style="list-style-type: none">3.7 miles of the Alternative's non-tunnel reach and 0.26 miles of tunnel reach are located within a liquefaction hazard zone. Tunnels are expected to be either in bedrock or below the liquefiable soil zone. However, this should be confirmed following subsurface studies.0.0 miles of non-tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone. 0.0 miles of tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone.1.5 miles are in Alquist-Priolo Earthquake Fault	<p>tunnel reaches, and 4.4 miles of tunnel reaches are within 150 feet of CGS landslide hazard zones or historical landslide zones. Landslide hazards may impact at-grade, elevated structures, trenches and portals.</p> <ul style="list-style-type: none">3.5 miles of the Alternative's non-tunnel reach and 0.3 miles of tunnel reach are located within a liquefaction hazard zone. Tunnels are expected to be either in bedrock or below the liquefiable soil zone. However, this should be confirmed following subsurface studies.0.0 miles of non-tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone. 0.65 miles of tunnel reach of the Alternative are within a half-mile radius of a City of Los Angeles Methane Hazard Zone.1.5 miles are in Alquist-Priolo Earthquake Fault Zones (note: not all hazardous faults are classified as Alquist-Priolo faults). The Alignment crosses 2.16 miles of the active San Andreas fault and 0.27 miles of the Verdugo fault

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
	<p>Zones (note: not all hazardous faults are classified as Alquist-Priolo faults). The Alignment crosses 2.93 miles of the active San Andreas, Santa Susana and San Fernando faults and 8.16 miles of the potentially active Little Escondido, Agua Dulce and Verdugo faults in non-tunnel reaches.</p> <ul style="list-style-type: none"> The Alignment crosses 1.04 miles of the potentially active Agua Dulce, San Gabriel and Whitney faults in tunnel reaches. 0.2 miles of non-tunnel reach of the Alternative falls within the Lake Palmdale Inundation Zone. 0.6 miles of non-tunnel reach of the Alternative fall within the North Lake Palmdale Inundation Zone. 6.9 miles of non-tunnel reach of the Alternative fall within the Hansen Dam Inundation Zone. 2.7 miles of non-tunnel reach of the Alternative fall within the Pacoima Dam Inundation 	<p>Zones (note: not all hazardous faults are classified as Alquist-Priolo faults). The Alignment crosses 2.93 miles of the active San Andreas, Santa Susana and San Fernando faults and 8.16 miles of the potentially active Little Escondido, Agua Dulce and Verdugo faults in non-tunnel reaches.</p> <ul style="list-style-type: none"> The Alignment crosses 0.77 miles of the potentially active Agua Dulce, San Gabriel and Whitney faults in tunnel reaches. 0.2 miles of non-tunnel reach of the Alternative fall within the Lake Palmdale Inundation Zone. 0.6 miles of non-tunnel reach of the Alternative fall within the North Lake Palmdale Inundation Zone. 6.9 miles of non-tunnel reach of the Alternative fall within the Hansen Dam Inundation Zone. 2.7 miles of non-tunnel reach of the Alternative fall within the Pacoima Dam Inundation 	<p>Zones (note: not all hazardous faults are classified as Alquist-Priolo faults). The Alignment crosses 2.93 miles of the active San Andreas, Santa Susana and San Fernando faults and 8.16 miles of the potentially active Little Escondido, Agua Dulce and Verdugo faults in non-tunnel reaches.</p> <ul style="list-style-type: none"> The Alignment crosses 1.04 miles of the potentially active Agua Dulce, San Gabriel and Whitney faults in tunnel reaches. 0.2 miles of non-tunnel reach of the Alternative fall within the Lake Palmdale Inundation Zone. 0.6 miles of non-tunnel reach of the Alternative fall within the North Lake Palmdale Inundation Zone. 6.9 miles of non-tunnel reach of the Alternative fall within the Hansen Dam Inundation Zone. 2.7 miles of non-tunnel reach of the Alternative fall within the Pacoima Dam Inundation 	<p>Zones (note: not all hazardous faults are classified as Alquist-Priolo faults). The Alignment crosses 2.93 miles of the active San Andreas, Santa Susana and San Fernando faults and 8.16 miles of the potentially active Little Escondido, Agua Dulce and Verdugo faults in non-tunnel reaches.</p> <ul style="list-style-type: none"> The Alignment crosses 0.77 miles of the potentially active Agua Dulce, San Gabriel and Whitney faults in tunnel reaches. 0.2 miles of non-tunnel reach of the Alternative fall within the Lake Palmdale Inundation Zone. 0.6 miles of non-tunnel reach of the Alternative fall within the North Lake Palmdale Inundation Zone. 6.9 miles of non-tunnel reach of the Alternative fall within the Hansen Dam Inundation Zone. 2.7 miles of non-tunnel reach of the Alternative fall within the Pacoima Dam Inundation 	<p>Zones (note: not all hazardous faults capable of producing ground-surface rupture are classified as Alquist-Priolo faults). The Alignment crosses 0.5 miles of the active San Andreas A-P fault zone in non-tunnel reaches.</p> <ul style="list-style-type: none"> The alignment crosses 0.5 miles of the active San Fernando A-P fault zone in tunnel reaches and crosses 0.4 miles of the San Fernando A-P fault zone in non-tunnel reaches. The alignment crosses the trace or traces of the potentially active Transmission Line, Lone Tree and San Gabriel faults in tunnel reaches and crosses the trace of the potentially active Verdugo fault in non-tunnel reaches. 0.6 miles of non-tunnel reach of the Alternative fall within the North Lake Palmdale Inundation Zone. 0.2 miles of non-tunnel reach of the Alternative falls within the Lake Palmdale 	<p>Zones (note: not all hazardous faults capable of producing ground-surface rupture are classified as Alquist-Priolo faults). The Alignment crosses 0.4 miles of the active San Andreas A-P fault zone in non-tunnel reaches.</p> <ul style="list-style-type: none"> The alignment crosses 0.5 miles of the active San Fernando A-P fault zone in tunnel reaches and crosses 0.4 miles of the San Fernando A-P fault zone in non-tunnel reaches. The alignment crosses the trace or traces of the potentially active Transmission Line, Lone Tree and San Gabriel faults in tunnel reaches and crosses the trace of the potentially active Verdugo fault in non-tunnel reaches. 0.6 miles of non-tunnel reach of the Alternative fall within the North Lake Palmdale Inundation Zone. 0.2 miles of non-tunnel reach of the Alternative fall within the Lake Palmdale 	<p>Zones (note: not all hazardous faults are classified as Alquist-Priolo faults). The Alignment crosses 2.16 miles of the active San Andreas fault and 0.43 miles of the San Fernando fault in non-tunnel reaches.</p> <ul style="list-style-type: none"> The alignment crosses 0.43 miles of the active San Fernando fault and 3.08 miles of the potentially active Transmission Line, Lone Tree, San Gabriel, Sierra Madre, and Verdugo faults in tunnel reaches. 0.6 miles of non-tunnel reach of the Alternative falls within the North Lake Palmdale Inundation Zone. 0.3 miles of non-tunnel reach of the Alternative falls within the Lake Palmdale Inundation Zone. 0.6 miles of non-tunnel reach of the Alternative falls within the Big Tujunga Inundation Zone. 3.6 miles of non-tunnel reach and 2.0 miles of tunnel reach of the Alternative falls 	<p>Earthquake Fault Zones (note: not all hazardous faults are classified as Alquist-Priolo faults). The Alignment crosses 2.16 miles of the active San Andreas fault and 0.19 miles of the San Fernando fault in non-tunnel reaches.</p> <ul style="list-style-type: none"> The alignment crosses 0.43 miles of the active San Fernando fault and 3.08 miles of the potentially active Transmission Line, Lone Tree, San Gabriel, Sierra Madre, and Verdugo faults in tunnel reaches. 0.3 miles of non-tunnel reach of the Alternative fall within the Lake Palmdale Inundation Zone. 0.6 miles of non-tunnel reach of the Alternative fall within the North Lake Palmdale Inundation Zone. 0.5 miles of non-tunnel reach of the Alternative fall within the Big Tujunga Dam Inundation Zone. 3.1 miles of non-tunnel reach of the Alternative fall within the Hansen 	<p>Zones (note: not all hazardous faults are classified as Alquist-Priolo faults). The Alignment crosses 2.16 miles of the active San Andreas fault and 0.27 miles of the Verdugo fault in non-tunnel reaches.</p> <ul style="list-style-type: none"> The alignment crosses 1.08 miles of active San Fernando-Sierra Madre fault zone and 0.84 miles of potentially active San Gabriel and Verdugo faults in tunnel reaches. 0.6 miles of non-tunnel reach of the Alternative falls within the North Lake Palmdale Inundation Zone. 0.3 miles of non-tunnel reach of the Alternative falls within the Lake Palmdale Inundation Zone. 0.5 miles of non-tunnel reach and 0.2 miles of tunnel reach of the Alternative falls within the Big Tujunga Inundation Zone. 3.6 miles of non-tunnel reach and 0.3 miles of tunnel reach of the Alternative falls 	<p>in non-tunnel reaches.</p> <ul style="list-style-type: none"> The alignment crosses 1.08 miles of active San Fernando-Sierra Madre fault zone and 0.84 miles of potentially active San Gabriel and Verdugo faults in tunnel reaches. 0.6 miles of non-tunnel reach of the Alternative fall within the North Lake Palmdale Inundation Zone. 0.3 miles of non-tunnel reach of the Alternative fall within the Lake Palmdale Inundation Zone. 0.5 miles of non-tunnel reach and 0.2 miles of tunnel reach of the Alternative fall within the Big Tujunga Inundation Zone. 0.3 miles of non-tunnel reach and 4.0 miles of tunnel reach of the Alternative fall within the Hansen Dam Inundation Zone. <p>Key issues will be those associated with tunneling, including ground support, fault rupture mitigation, and control of groundwater.</p>

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
	Zone. Key issues will be those associated with tunneling, including ground support, fault rupture mitigation, and control of groundwater.	Zone. Key issues will be those associated with tunneling, including ground support, fault rupture mitigation, and control of groundwater.	Zone. Key issues will be those associated with tunneling, including ground support, fault rupture mitigation, and control of groundwater.	Zone. Key issues will be those associated with tunneling, including ground support, fault rupture mitigation, and control of groundwater.	Inundation Zone. <ul style="list-style-type: none">6.7 miles of non-tunnel reach of the Alternative falls within the Hansen Dam Inundation Zone.1 mile of non-tunnel reach and 2.5 miles of tunnel reach of the Alternative fall within the Pacoima Dam Inundation Zone. Key issues will be those associated with tunneling, including ground support, fault rupture mitigation, and control of groundwater.	Inundation Zone. <ul style="list-style-type: none">6.7 miles of non-tunnel reach of the Alternative falls within the Hansen Dam Inundation Zone.1 mile of non-tunnel reach and 2.5 miles of tunnel reach of the Alternative fall within the Pacoima Dam Inundation Zone. Key issues will be those associated with tunneling, including ground support, fault rupture mitigation, and control of groundwater.	within the Hansen Dam Inundation Zone. Key issues will be those associated with tunneling, including ground support, fault rupture mitigation, and control of groundwater.	Dam Inundation Zone. 1.3 miles of tunnel reach of the Alternative fall within the Hansen Dam Inundation Zone. Key issues will be those associated with tunneling, including ground support, fault rupture mitigation, and control of groundwater.	within the Hansen Dam Inundation Zone. Key issues will be those associated with tunneling, including ground support, fault rupture mitigation, and control of groundwater.	
Groundwater Resources Source of data: Perennial springs, seeps and streams - USGS NHD Sub-watersheds: Los Angeles County GIS Data Portal Domestic wells: County of Los Angeles DPW	<u>Sub-Watersheds</u> Total number potentially affected: 6 <u>Springs</u> Directly above tunnel: 2 Within one mile: 0 Between one and two miles: 0 <u>Perennial streams</u> Within one mile: 0 Between one and two miles: 0 <u>Domestic Wells</u> Potentially impacted within one mile: 2	<u>Sub-Watersheds</u> Total number potentially affected: 6 <u>Springs</u> Directly above tunnel: 2 Within one mile: 0 Between one and two miles: 0 <u>Perennial streams</u> Within one mile: 0 Between one and two miles: 0 <u>Domestic Wells</u> Potentially impacted within one mile: 2	<u>Sub-Watersheds</u> Total number potentially affected: 6 <u>Springs</u> Directly above tunnel: 0 Within one mile: 2 Between one and two miles: 0 <u>Perennial streams</u> Within one mile: 0 Between one and two miles: 0 <u>Domestic Wells</u> Potentially impacted within one mile: 4	<u>Sub-Watersheds</u> Total number potentially affected: 6 <u>Springs</u> Directly above tunnel: 0 Within one mile: 2 Between one and two miles: 0 <u>Perennial streams</u> Within one mile: 0 Between one and two miles: 0 <u>Domestic Wells</u> Potentially impacted within one mile: 4	<u>Sub-Watersheds</u> Total number potentially affected: 6 The horizontal profile passes directly through the Little Tujunga Canyon Watershed. <u>Springs</u> Directly above tunnel: 1 Within one mile: 10 Between one and two miles: 4 <u>Perennial streams</u> Within one mile: 1 Between one and two miles: 1 <u>Domestic Wells</u> Potentially impacted within one mile: 21	<u>Sub-Watersheds</u> Total number potentially affected: 6 The horizontal profile passes directly through the Little Tujunga Canyon Watershed. <u>Springs</u> Directly above tunnel: 1 Within one mile: 8 Between one and two miles: 6 <u>Perennial streams</u> Within one mile: 1 Between one and two miles: 1 <u>Domestic Wells</u> Potentially impacted within one mile: 21	<u>Sub-Watersheds</u> Total number potentially affected: 6 The horizontal profile passes directly through the Little Tujunga Canyon Watershed. <u>Springs</u> Directly above tunnel: 5 Within one mile: 12 Between one and two miles: 7 <u>Perennial streams</u> Within one mile: 0 Between one and two miles: 0 <u>Domestic Wells</u> Potentially impacted within one mile: 15	<u>Sub-Watersheds</u> Total number potentially affected: 6 The horizontal profile passes directly through the Little Tujunga Canyon Watershed. <u>Springs</u> Directly above tunnel: 5 Within one mile: 10 Between one and two miles: 9 <u>Perennial streams</u> Within one mile: 0 Between one and two miles: 0 <u>Domestic Wells</u> Potentially impacted within one mile: 15	<u>Sub-Watersheds</u> Total number potentially affected: 6 The horizontal profile passes on the periphery of the Little Tujunga Canyon Watershed. <u>Springs</u> Directly above tunnel: 1 Within one mile: 11 Between one and two miles: 8 <u>Perennial streams</u> Within one mile: 5 Between one and two miles: 1 <u>Domestic Wells</u> Potentially impacted within one mile: 7	<u>Sub-Watersheds</u> Total number potentially affected: 6 The horizontal profile passes on the periphery of the Little Tujunga Canyon Watershed. <u>Springs</u> Directly above tunnel: 1 Within one mile: 9 Between one and two miles: 10 <u>Perennial streams</u> Within one mile: 5 Between one and two miles: 1 <u>Domestic Wells</u> Potentially impacted within one mile: 7
Hazardous Materials	<u>Tunnel</u> The alternative tunnels through the	<u>Tunnel</u> The alternative tunnels through the	Same as SR14-1	Same as SR14-2	<u>Tunnel</u> Through the mountainous region, the alternative tunnels through former areas of oil	<u>Tunnel</u> Through the mountainous region, the alternative tunnels through former areas of oil	<u>Tunnel</u> Through the mountainous region,	<u>Tunnel</u> Through the mountainous region,	<u>Tunnel</u> Through the mountainous region, the alternative tunnels through former areas of oil exploration;	

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
	<p>Placerita Oil Field. Rock formations may contain naturally occurring crude oil in this area. Available data indicates there are numerous active oil and gas wells located within 1,000 feet of the alternative, a majority of which are located south of Placerita Canyon Road and north of Whitney Canyon Road in the City of Santa Clarita. There are a greater number of wells within 1,000 feet of this alternative verses SR14-2 and SR14-4.</p> <p><u>Non-Tunnel</u> The alternative passes through parcels with known contamination and ongoing cleanup and/or monitoring, the majority of which are located in San Fernando, Sun Valley, and Burbank. High possibility of encountering contaminated soils, soil vapor, and groundwater during grading and construction in these areas. The alternative also passes through the San Fernando Valley (Area 1 and Area 2) Superfund, a regional area of contaminated groundwater.</p> <p>Demolition of existing structures may</p>	<p>Placerita Oil Field. Rock formations may contain naturally occurring crude oil in this area. Available data indicates there are numerous active oil and gas wells located within 1,000 feet of the alternative, a majority of which are located south of Placerita Canyon Road and north of Whitney Canyon Road in the City of Santa Clarita. There are a fewer number of wells within 1,000 feet of this alternative verses SR14-1and SR14-3.</p> <p><u>Non-Tunnel</u> Same as SR14-1</p>			<p>exploration; however, the corridor does not cross jurisdictional boundaries of oil fields. Available data indicates there are no oil wells within 1,000 feet of the corridor. Rock formations may contain naturally occurring crude oil in this area.</p> <p><u>Non-Tunnel</u> The alternative passes through parcels with known contamination and ongoing cleanup and/or monitoring, the majority of which are located in Pacoima, Sun Valley, and Burbank. High possibility of encountering contaminated soils, soil vapor, and groundwater during grading and construction in these areas. The alternative also passes through the San Fernando Valley (Area 1) Superfund, a regional area of contaminated groundwater.</p> <p>Demolition of existing structures may encounter asbestos, lead-paint, and other hazardous materials requiring proper disposal.</p> <p>Along major highway right-of-ways, there is the potential for encountering aerially deposited lead in shallow soil. Within and adjacent to existing rail alignments expect hydrocarbons, lead, and arsenic in near surface soils.</p>		<p>the alternative tunnels through former areas of oil exploration; however, the corridor does not cross jurisdictional boundaries of oil fields. Available data from wells drilled within 1,000 feet of the corridor indicate there is one active oil and gas well off of Gold Creek Road (APN: 2581021001) approximately 340 feet west of the alternative. Another plugged oil and gas well is located approximately 300 feet west of the alternative off of Gold Creek Road (APN: 2581021005). Rock formations may contain naturally occurring crude oil in this area.</p> <p><u>Non-Tunnel</u> The alternative passes through parcels with known contamination and ongoing cleanup and/or monitoring, the majority of which are located in Sun Valley and Burbank. High possibility of encountering contaminated soils, soil vapor, and groundwater during grading and construction in these areas. The alternative also passes through the San Fernando Valley (Area 1) Superfund, a regional area of</p>	<p>the alternative tunnels through former areas of oil exploration; however, the corridor does not cross jurisdictional boundaries of oil fields. Available data from wells drilled within 1,000 feet of the corridor indicate there is one active oil and gas well off of Gold Creek Road (APN: 2581021001) approximately 550 feet west of the alternative. Another plugged oil and gas well is located approximately 700 feet west of the alternative off of Gold Creek Road (APN: 2581021005). Rock formations may contain naturally occurring crude oil in this area.</p> <p><u>Non-Tunnel</u> The alternative passes through parcels with known contamination and ongoing cleanup and/or monitoring, the majority of which are located in Sun Valley and Burbank. High possibility of encountering contaminated soils, soil vapor, and groundwater during grading and construction in these areas. The alternative also passes through the San Fernando Valley (Area 1) Superfund, a regional area of</p>	<p>however, the corridor does not cross jurisdictional boundaries of oil fields. Available data from wells drilled within 1,000 feet of the corridor indicate there is one active oil and gas well off of Oro Vista Avenue (APN: 551001300) approximately 500 feet west of the alternative. An active oil and gas well is also located approximately 90 feet east of the alternative off of Eby Canyon Road (APN: 2551006005). An additional active oil and gas well is located approximately 340 feet west of the alternative off Conover Fire Road (APN: 2548002900). Rock formations may contain naturally occurring crude oil in this area.</p> <p><u>Non-Tunnel</u> The alternative passes through parcels with known contamination and ongoing cleanup and/or monitoring, the majority of which are located in Burbank. High possibility of encountering contaminated soils, soil vapor, and groundwater during grading and construction in these areas. The alternative also passes through the San Fernando Valley (Area 1) Superfund, a regional area of contaminated groundwater.</p> <p>Demolition of existing structures may encounter asbestos, lead-paint, and other hazardous materials requiring proper disposal.</p> <p>Along major highway right-of-ways, there is the potential for encountering aerially deposited lead in shallow soil. Within and adjacent to existing rail alignments expect hydrocarbons, lead, and arsenic in near surface soils.</p>	

Table 1 – SR14 and East Corridors Alignment Alternatives Detailed Evaluation Table¹

Measurement Criteria	SR 14 Corridor				East Corridor					
	SR14-1 (SR14 Hybrid-SCLT-SFW)	SR14-2 (SR14 Hybrid-SCS-SFW)	SR14-3 (SR14 East-SCLT-SFW)	SR14-4 (SR14 East-SCS-SFW)	E1a	E1b	E2a	E2b	E3a	E3b
	encounter asbestos, lead-paint, and other hazardous materials requiring proper disposal. Along major highway right-of-ways, there is the potential for encountering aerially deposited lead in shallow soil. Within and adjacent to existing rail alignments expect hydrocarbons, lead, and arsenic in near surface soils.						contaminated groundwater. Demolition of existing structures may encounter asbestos, lead-paint, and other hazardous materials requiring proper disposal. Along major highway right-of-ways, there is the potential for encountering aerially deposited lead in shallow soil. Within and adjacent to existing rail alignments expect hydrocarbons, lead, and arsenic in near surface soils.	contaminated groundwater. Demolition of existing structures may encounter asbestos, lead-paint, and other hazardous materials requiring proper disposal. Along major highway right-of-ways, there is the potential for encountering aerially deposited lead in shallow soil. Within and adjacent to existing rail alignments expect hydrocarbons, lead, and arsenic in near surface soils.		
Fire Risk	Fire risk was analyzed using data from the California State Fire and Resource Assessment Program. Fire risk is very similar among the SR14 Corridor alignment alternatives. There is little to no risk within the urbanized areas of Palmdale and the San Fernando Valley. However, all of the alignments are subject to Very High risk fire areas from the Community of Acton to Sylmar. Based on the overall length of tunnel profile within the Very High risk fire areas, SR14-1 would have the least fire risk because it would have the longest length of tunnel profile, while SR14-4 would have the greatest risk because it would have the shortest length of tunnel profile.				Fire risk was analyzed using data from the California State Fire and Resource Assessment Program. Fire risk is very similar among the East Corridor alignment alternatives. There is little to no risk within the urbanized areas of Palmdale and the San Fernando Valley. However, all of the alignments are subject to Very High risk fire areas from the Community of Acton through the Angeles National Forest. Based on the overall length of tunnel profile within the Very High risk fire areas, E3b would have the least fire risk because it would have the longest length of tunnel profiles, while E2a would have the greatest risk because it would have the shortest length of tunnel profile.					
Agency and Public Input	As noted in the SAA document, since May 2014, the Authority has conducted numerous meetings and outreach activities with agencies, elected officials, media outlets, stakeholders, and the general public. Public input is mixed, with some preferring an SR14 alternative over an East Corridor alternative, and others preferring an East Corridor alternative over an SR14 alternative.									

Table 2 – Station Platforms Detailed Evaluation Table

Measurement Criteria	Palmdale Station Platform	Burbank Airport Station Option A (Compatible with E1 and all four SR14 Corridor Alignment Alternatives)	Burbank Airport Station Option B (Compatible with E1, E2, E4, E5 and all four SR14 Corridor Alignment Alternatives)	Burbank Airport Station Option C (Compatible with E3 and E6)
Design Objectives				
Intermodal Connections	Good linkage with existing intercity and regional rail systems by providing a direct connection to Metrolink service. Approximately 3 miles from Palmdale regional airport.	Good linkage with Bob Hope Airport and its planned transit center (1 mile away). Less than ½-mile from I-5 freeway, reached along N. Hollywood Way or North Buena Vista Blvd. Co-located Metrolink stop would be ¼-mile from the planned Burbank Airport-Hollywood Way Metrolink station and 3 miles from existing Downtown Burbank Metrolink Station. Currently Metro bus routes 94, 169, 222, and 794 as well as Burbank Bus's Empire to Downtown Shuttle pass within 1,000 feet of the station site. Metro route 292 passes within 1,500 feet. Some of these routes would be adjusted and new routes introduced to serve the HSR station.	Best linkage with Bob Hope Airport and its planned transit center (0.5 mile away). One mile from I-5 freeway, reached along N. Hollywood Way or North Buena Vista Blvd. Approximately ½-mile from the existing Burbank Bob Hope Airport Metrolink Station on the Ventura County Line. Currently Metro bus routes 94, 169, 222, and 794 as well as Burbank Bus's Empire to Downtown Shuttle run down Hollywood Way and adjacent to the station site. Metro route 292 passes within 1 mile. Some of these routes would be adjusted and new routes introduced to serve the HSR station.	Good linkage with Bob Hope Airport and its planned transit center (0.5 mile away). One mile from I-5 freeway, reached along N. Hollywood Way or North Buena Vista Blvd. Approximately ½-mile from the existing Burbank Bob Hope Airport Metrolink Station on the Ventura County Line. Currently Metro bus routes 94, 169, 222, and 794 as well as Burbank Bus's Empire to Downtown Shuttle run down Hollywood Way and adjacent to the station site. Metro route 292 passes within 1 mile. Some of these routes would be adjusted and new routes introduced to serve the HSR station.
Relative Operating Costs	N/A	1.0	More expensive than Option A.	Similar cost to Option B.
Relative Capital Cost Factor	N/A	1.0	More expensive than Option A.	Similar cost to Option B.
Land Use				
Transit Oriented Development (TOD) Potential	The proposed station platform is located in the City of Palmdale, within the Palmdale Transit Village Specific Plan area. The planned land uses within a quarter mile are industrial, residential, commercial, and public facilities in the City of Palmdale, and industrial and residential in Unincorporated Los Angeles County. Existing land uses within a quarter mile of the station area include residential, commercial, industrial, transit, vacant land, and a school. There is high potential to create a substantial mixed-use TOD area around the station. There is vacant land within the quarter mile station area that is already planned for a mix of transit-supportive land uses in the Palmdale Transit Village Specific Plan. However, the platform location would displace existing residences and would displace R. Rex Parris High School either partially or completely.	The proposed station platform is located in the City of Burbank and the City of Los Angeles. The planned land uses within a quarter mile of the station platform include Golden State Commercial/industrial, institutional, and airport in the City of Burbank, and light manufacturing, public facilities, and low residential in the City of Los Angeles. Existing land uses within a quarter mile of the station area include single family residences, industrial, commercial, office, vacant land, and airport uses. Moderate opportunities exist to create a mixed-use TOD area around the station. TOD development would be limited by existing single-family residential areas. A portion of the quarter mile station area is within the Burbank Airport influence area, where residential development would be excluded or limited due to airport safety and compatibility concerns. However there are existing commercial corridors and large areas of land currently used for outdoor storage of vehicles directly south of the proposed station platform that could be used for TOD.	The proposed station platform is located in the City of Burbank, while the quarter mile station area also includes a portion in the City of Los Angeles. The planned land uses within a quarter mile of the station platform include Golden State Commercial/industrial, institutional, and airport in the City of Burbank, and light manufacturing and public facilities in the City of Los Angeles. Existing land uses within a quarter mile of the station area include industrial, commercial, vacant land, and the Burbank Airport. Limited opportunities exist to create a mixed-use TOD area around the station. More than half of the quarter mile station area is located within the Burbank Airport influence area, where residential development would be excluded or limited due to airport safety and compatibility concerns. However, existing commercial corridors and large areas of land currently used for outdoor storage of vehicles to the northeast of the proposed station platform could be used for TOD.	The proposed station platform is located in the City of Burbank, while the quarter mile station area also includes a portion in the City of Los Angeles. The planned land uses within a quarter mile of the station platform include Golden State Commercial/industrial, institutional, and airport in the City of Burbank, and light manufacturing, low residential, and public facilities in the City of Los Angeles. Existing land uses within a quarter mile of the station area include industrial, commercial, vacant land, the Burbank Airport, and residential. There is a high potential to create a mixed-use TOD area around the station. While a portion of the quarter mile station area is within the Burbank Airport influence area, where residential development would be excluded or limited due to airport safety and compatibility concerns, the majority of the quarter mile station area is not in the airport influence area. Additionally, there are large areas of vacant land, land used for outdoor storage, and existing commercial areas and corridors that could be used for TOD.
Consistency with Other Planning	The potential station platform location is consistent with local planning efforts and adopted plans. The Palmdale Transit Village Specific Plan allows for a mix of uses that are complementary with development of the Transportation Center and closely follow the principles of TOD. The Plan's goals include promoting opportunities for rail service (Goal C4). However, the Specific Plan's Illustrative site plan depicts multi-family residences and office uses in the proposed station platform location.	The proposed station platform is consistent with the City of Los Angeles General Plan, which designates the location as public facility. The Sun Valley La Tuna Canyon Community Plan supports mixed-use development along commercial corridors, promoting housing in mixed-use projects in transit intensive locations (policy 1-5.2), and encouraging alternative modes of transportation (goal 11). However the Plan includes objectives to retain existing industrial uses and conserve and strengthen viable industrial development (Objective 3-1 and 3-2), which new TOD development in existing industrial areas would be inconsistent with. The proposed station platform is also consistent with the City of Burbank General Plan, which designates the location as institutional. The institutional land use provides for railroad	The proposed station platform is designated as commercial/industrial and airport in the City of Burbank General Plan. While the station platform is consistent with the Commercial/Industrial land use designation, which supports introduction of commercial uses and introduction of niche residential compatible with the industrial character, the station platform is inconsistent with the airport land use designation. The Airport land use designation accommodates uses directly related to the airport, and not transit or TOD uses. The General Plan's policies include improving and expanding transit centers, improving transit connections with nearby communities, promoting multimodal transit centers, integrating transit with adjacent land uses, and promoting public-private partnerships for	The proposed station platform is designated as commercial/industrial and airport in the City of Burbank General Plan. While the station platform is consistent with the Commercial/Industrial land use designation, which supports introduction of commercial uses and introduction of niche residential compatible with the industrial character, the station platform is inconsistent with the airport land use designation. The Airport land use designation accommodates uses directly related to the airport, and not transit or TOD uses. The General Plan's policies include improving and expanding transit centers, improving transit connections with nearby communities, promoting multimodal transit centers, integrating transit with adjacent land uses, and promoting public-private

Table 2 – Station Platforms Detailed Evaluation Table

Measurement Criteria	Palmdale Station Platform	Burbank Airport Station Option A (Compatible with E1 and all four SR14 Corridor Alignment Alternatives)	Burbank Airport Station Option B (Compatible with E1, E2, E4, E5 and all four SR14 Corridor Alignment Alternatives)	Burbank Airport Station Option C (Compatible with E3 and E6)
		tracks and other uses. The General Plan's policies include improving and expanding transit centers, improving transit connections with nearby communities, promoting multimodal transit centers, integrating transit with adjacent land uses, and promoting public-private partnerships for TOD (Policies 4.3, 4.5, 4.7, 4.8, and 4.10). The Commercial/Industrial land use designation supports introduction of commercial uses and introduction of niche residential compatible with the industrial character. However the Airport land use designation accommodates uses directly related to the airport, and not transit or TOD uses.	TOD (Policies 4.3, 4.5, 4.7, 4.8, and 4.10). A portion of the quarter mile station area is located in the City of Los Angeles. This area is designated as light manufacturing. The Sun Valley La Tuna Canyon Community Plan includes objectives to retain existing industrial uses and conserve and strengthen viable industrial development (Objective 3-1 and 3-2), which new TOD development in existing industrial areas would be inconsistent with.	partnerships for TOD (Policies 4.3, 4.5, 4.7, 4.8, and 4.10). A portion of the quarter mile station area is located in the City of Los Angeles. This area is designated as light manufacturing, low residential, and public facilities. The Sun Valley La Tuna Canyon Community Plan includes objectives to retain existing industrial uses and conserve and strengthen viable industrial development (Objective 3-1 and 3-2), which new TOD development in existing industrial areas would be inconsistent with. However, the Sun Valley La Tuna Canyon Community Plan supports mixed use development along commercial corridors, promoting housing in mixed use projects in transit intensive locations (policy 1-5.2), and encouraging alternative modes of transportation (goal 11).
Constructability				
Constructability	At-grade station, expected to be straightforward to construct.	At-grade station at end of airport runway, adjacent to existing road and rail. Disruptions for long construction duration.	Station in trench and more complex and longer construction duration due to direct impacts to airport facilities. Operational impacts to transportation corridors and restricted work hours.	Station in trench, parallel and adjacent to N. Hollywood Way. Would be difficult to construct.
Disruption to existing railroads	Included with alignment data	Included with alignment data	Included with alignment data	Included with alignment data
Disruption to and relocation of utilities	No known high risk utility conflicts within station site. Local, lower risk utilities would be relocated to suit station configuration.	No known high risk utility conflicts within station site. Local, lower risk utilities would be relocated to suit station configuration.	No known high risk utility conflicts within station site. Local, lower risk utilities would be relocated to suit station configuration.	No known high risk utility conflicts within station site. Local, lower risk utilities would be relocated to suit station configuration.
Disruption to Communities				
Residential Displacements	0- multi- family residential 6- single family residential	0- multi- family residential 0- single family residential	0- multi- family residential 0- single family residential	0- multi- family residential 0- single family residential
Business Displacement (in excess of No Station)	9 – commercial parcels 1 – industrial parcels	0 – commercial parcels 0 – industrial parcels	0 – commercial parcels 1 – industrial parcels	0 – commercial parcels 4 – industrial parcels
Proximity to Schools (These schools are also within ¼-mile of the alignment through the San Fernando Valley, regardless if the respective station option is present.)	Schools within ¼-mile on either side of the station platform: 1	Schools within ¼-mile on either side of the station platform: 0	Schools within ¼-mile on either side of the station platform: 0	Schools within ¼-mile on either side of the station platform: 0
Proximity to Landfills (This landfill is also within ¼-mile of the alignment through the San Fernando Valley, regardless if the respective station option is present.)	Landfills within ¼-mile on either side of the station platform: 0	Landfills within ¼-mile on either side of the station platform: 0	Landfills within ¼-mile on either side of the station platform: 0	Landfills within ¼-mile on either side of the station platform: 0

Table 2 – Station Platforms Detailed Evaluation Table

Measurement Criteria	Palmdale Station Platform	Burbank Airport Station Option A (Compatible with E1 and all four SR14 Corridor Alignment Alternatives)	Burbank Airport Station Option B (Compatible with E1, E2, E4, E5 and all four SR14 Corridor Alignment Alternatives)	Burbank Airport Station Option C (Compatible with E3 and E6)
Local Traffic Effects	<p>It is assumed that the platform will be placed at-grade. Arterials, including Clock Tower Plaza Drive E./ 6th Street E., E. Avenue P 14, and E. Avenue Q will be impacted.</p> <p>Assuming the proposed HSR station is situated directly west of the platform footprint, access to the HSR station could be provided from the west via E. Avenue Q, and with a westward extension of E. Avenue P 14. Access could also be provided from the north via E. Avenue P 12 and Transportation Drive. It is highly likely that Clock Tower Plaza Drive E. in the vicinity of Transportation Drive (north of the platform footprint) will be permanently closed. Access could be provided from the south via a realigned 6th St E., E. Avenue Q 3, and/or a re-purposed parallel street, such as 5th St E. Several access alternatives would provide distribution of arriving and departing vehicles, and would also allow for one or more of those access points to be designated as, transit only.</p> <p>More detailed information, such as a site plan that indicates planned station access points will be provided for more advanced analysis in future environmental documentation.</p>	<p>It is assumed that the platform will be placed at-grade. Arterials, including N. San Fernando Road, Cohasset Street, and Lockheed Drive will be impacted and/or permanently closed. It is assumed that N. San Fernando Road would require a significant realignment and/or change of grade – either elevated, or subgrade. It is assumed that Cohasset Street and Lockheed Drive would be closed permanently and consumed by a station structure and/or the station parking area. From a traffic circulation standpoint, the realignment of N. San Fernando Road could be accomplished while maintaining existing capacity. It may present an opportunity to expand capacity in the immediate vicinity of the HSR station.</p> <p>The grade separated intersection of N. San Fernando Road and N. Hollywood Way would be impacted by the realignment of N. San Fernando Road and would also be affected by increased traffic generated by the station.</p> <p>It is assumed that access to the HSR station would be primarily (if not exclusively) from N. Hollywood Way. It may be possible to create a secondary access point from the realigned N. San Fernando Road. This should be considered to provide some distribution of HSR station vehicular traffic. This could be a transit vehicle only access point, providing separation of general vehicular traffic and transit vehicles.</p> <p>It can be anticipated that the location of the HSR station proximate to the airport will increase vehicular traffic congestion levels. This impact is likely to be most pronounced on surface streets in the vicinity of the airport and the HSR station, and less pronounced on the I-5 and SR 134 freeways.</p> <p>More detailed information, such as a site plan that indicates planned station access points will be provided for more advanced analysis in future environmental documentation.</p>	<p>It is assumed that the platform will be placed at-grade. It is assumed that the station structure and parking area would be located to the east of the platform, between the platform and N. Hollywood Way.</p> <p>It is assumed that access to the HSR station would be primarily (if not exclusively) from N. Hollywood Way. Depending on the size and positioning of the station and parking area, it may be possible to also have access to the HSR station from N. San Fernando Road. This should be considered to provide some distribution of HSR station vehicular traffic. This could also be a transit vehicle only access point, providing separation of general vehicular traffic and transit vehicles.</p> <p>It can be anticipated that the location of the HSR station proximate to the airport will increase vehicular traffic congestion levels. This impact is likely to be most pronounced on surface streets in the vicinity of the airport and the HSR station, and less pronounced on the I-5 and SR 134 freeways.</p> <p>Among the three options considered (A, B, and C), this option appears – upon high-level review – to have the least impacts on the physical roadway infrastructure surrounding the proposed HSR station.</p> <p>More detailed information, such as a site plan that indicates planned station access points will be provided for more advanced analysis in future environmental documentation.</p>	<p>It is assumed that the platform will be placed at-grade. It is assumed that the station structure and parking area would be located to the west of the platform, between the platform and the north-south oriented airport runway (15/33).</p> <p>The grade separated intersection of N. San Fernando Road and N. Hollywood Way would be impacted by this platform option. It appears that the platform footprint would encroach upon the connector road/ramp between of N. San Fernando Road and N. Hollywood Way (in the southwest quadrant of the intersection). A replacement solution for this connector road/ramp is not obvious.</p> <p>The size and positioning of the station and parking area will direct the access points to the HSR station. It is assumed that primary access to the HSR station is from N. Hollywood Way, at the south end of the platform. Again, depending on the size and positioning of the station and parking area, it may be possible to also provide HSR station access from N. San Fernando Road. This should be considered to provide some distribution of HSR station vehicular traffic. This could also be a transit vehicle only access point, providing separation of general vehicular traffic and transit vehicles.</p> <p>It can be anticipated that the location of the HSR station proximate to the airport will increase vehicular traffic congestion levels. This impact is likely to be most pronounced on surface streets in the vicinity of the airport and the HSR station, and less pronounced on the I-5 and SR 134 freeways.</p> <p>More detailed information, such as a site plan that indicates planned station access points will be provided for more advanced analysis in future environmental documentation.</p>
Environmental Resources				
Potential Section 4(f) and 6(f) Resources	<p>Parklands: Section 4(f) impacts will be applicable to all parks and recreational areas of national, state, or local significance that are both publically owned and open to the public, while Section 6(f) will be applicable to lands acquired with Land and Water Conservation Act funds.</p> <p>There are 2.1 acres of parklands within 100 feet of the station platform, and 40.6 acres of parklands within a ½-mile of the station platform which may have a likelihood of an impact under Section 4(f). Final determination of national, state, or local significance, the nature of Section 4(f) impacts, as well as determining if any of these lands were acquired with Land and Water Conservation Act funds</p>	<p>Parklands: Section 4(f) impacts will be applicable to all parks and recreational areas of national, state, or local significance that are both publically owned and open to the public, while Section 6(f) will be applicable to lands acquired with Land and Water Conservation Act funds.</p> <p>There are 0 acres of parklands within 100 feet of the station platform, and 17.8 acres of parklands within a ½-mile of the station platform which may have a likelihood of an impact under Section 4(f). Final determination of national, state, or local significance, the nature of Section 4(f) impacts, as well as determining if any of these lands were acquired with Land and Water Conservation Act funds</p>	<p>Parklands: Section 4(f) impacts will be applicable to all parks and recreational areas of national, state, or local significance that are both publically owned and open to the public, while Section 6(f) will be applicable to lands acquired with Land and Water Conservation Act funds.</p> <p>There are 0 acres of parklands within 100 feet of the station platform, and 0 acres of parklands within a ½-mile of the station platform which may have a likelihood of an impact under Section 4(f). Final determination of national, state, or local significance, the nature of Section 4(f) impacts, as well as determining if any of these lands were acquired with Land and Water Conservation Act funds will</p>	<p>Parklands: Section 4(f) impacts will be applicable to all parks and recreational areas of national, state, or local significance that are both publically owned and open to the public, while Section 6(f) will be applicable to lands acquired with Land and Water Conservation Act funds.</p> <p>There are 0 acres of parklands within 100 feet of the station platform, and 15.5 acres of parklands within a ½-mile of the station platform which may have a likelihood of an impact under Section 4(f). Final determination of national, state, or local significance, the nature of Section 4(f) impacts, as well as determining if any of these lands were acquired with Land and Water Conservation Act</p>

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	will be determined in future environmental documentation. Biological/Aquatic Resources No Impacts to LA County SEA's Cultural Resources within the APE No previously recorded Archaeological Sites are located within the archaeology study area (inclusive of the station platform and a 100-foot buffer). No significant Historic Architectural Sites within historic architecture study area (inclusive of the station platform and a 100-foot buffer).	will be determined in future environmental documentation. Biological/Aquatic Resources No Impacts to LA County SEA's Cultural Resources within the APE No previously recorded Archaeological Sites are located within the archaeology study area (inclusive of the station platform and a 100-foot buffer). No significant Historic Architectural Sites within historic architecture study area (inclusive of the station platform and a 100-foot buffer).	be determined in future environmental documentation. Biological/Aquatic Resources No Impacts to LA County SEA's Cultural Resources within the APE No previously recorded Archaeological Sites are located within the archaeology study area (inclusive of the station platform and a 100-foot buffer). No significant Historic Architectural Sites within historic architecture study area (inclusive of the station platform and a 100-foot buffer).	funds will be determined in future environmental documentation. Biological/Aquatic Resources No Impacts to LA County SEA's Cultural Resources within the APE One previously recorded Archaeological Site is located within the archaeology study area (inclusive of the station platform and a 100-foot buffer). It is not considered a significant Archaeological Site. No significant Historic Architectural Sites within historic architecture study area (inclusive of the station platform and a 100-foot buffer).
Biological/Aquatic Resources Potential impacts are calculated using the following distances: Plants: 100-feet Aquatic Resources: 250-ft Wildlife: 1,000-ft	Aquatic Resources: NHD Water Courses: Canal/Ditch – 1,894.8 feet Biological Resources: Critical Habitat: No Impact to Critical Habitat Number of Special-Status Wildlife (CWHR) Habitats: 19 Number of Special-Status Wildlife Occurrences (CNDDDB): 5 Number of Special-Status Plant Occurrences (CNDDDB): 1	Aquatic Resources: No Impacts to Aquatic Resources Biological Resources: Critical Habitat: No Impact to Critical Habitat Number of Special-Status Wildlife (CWHR) Habitats: 20 Number of Special-Status Wildlife Occurrences (CNDDDB): 1 Number of Special-Status Plant Occurrences (CNDDDB): No Impacts to CNDDDB plant locations	Aquatic Resources: No Impacts to Aquatic Resources Biological Resources: Critical Habitat: No Impact to Critical Habitat Number of Special-Status Wildlife (CWHR) Habitats: 20 Number of Special-Status Wildlife Occurrences (CNDDDB): 1 Number of Special-Status Plant Occurrences (CNDDDB): No Impacts to CNDDDB plant locations	Aquatic Resources: No Impacts to Aquatic Resources Biological Resources: Critical Habitat: No Impact to Critical Habitat Number of Special-Status Wildlife (CWHR) Habitats: 20 Number of Special-Status Wildlife Occurrences (CNDDDB): 1 Number of Special-Status Plant Occurrences (CNDDDB): No Impacts to CNDDDB plant locations
Cultural Resources	0 previously recorded Archeological Sites are located within ½ mile of the station platform. 0 previously recorded Historic Architectural Sites are located within ½ mile of the station platform. Therefore, no previously recorded cultural resources are expected to be adversely affected by the station platform.	0 previously recorded Archeological Sites are located within ½ mile of the station platform. 0 previously recorded Historic Architectural Sites are located within ½ mile of the station platform. Therefore, no previously recorded cultural resources are expected to be adversely affected by the station platform.	0 previously recorded Archeological Sites are located within ½ mile of the station platform. 0 previously recorded Historic Architectural Sites are located within ½ mile of the station platform. Therefore, no previously recorded cultural resources are expected to be adversely affected by the station platform.	4 previously recorded Archeological Sites are located within ½ mile of the station platform. 3 previously recorded Historic Architectural Sites are located within ½ mile of the station platform. Only 1 of these cultural resources is located within a 100-foot buffer of the station platform; therefore, no cultural resources are expected to be adversely affected by the station platform.
Parklands	Within 100 Feet of the Station 2.1 acres of parklands (R. Rex Parris High School – 2.1 acres)	Within 100 Feet of the Station 0.0 acres of parklands	Within 100 Feet of the Station 0.0 acres of parklands	Within 100 Feet of the Station 0.0 acres of parklands
Agricultural Lands	No agricultural lands within or adjacent to station footprint.	No agricultural lands within or adjacent to station footprint.	No agricultural lands within or adjacent to station footprint.	No agricultural lands within or adjacent to station footprint.
Demographics and Socioeconomic Composition	The station buffer area (1/2-mile from center of platforms) includes portions of 4 Census tracts. These Census tracts are characterized as having populations that are over 50% minority. In addition, these Census tracts are low income, defined as having a percentage of the population living in poverty at or above the LA County average (16%). These	The station buffer area (1/2-mile from center of platforms) includes portions of 3 Census tracts. Two of these Census tracts are characterized as having populations that are over 50% minority. In addition, only one of these Census tracts is considered low income, defined as having a percentage of the population living in poverty at or above the LA	The station buffer area (1/2-mile from center of platforms) includes portions of 2 Census tracts. Both Census tracts are characterized as having populations that are over 50% minority. In addition, only one of these Census tracts is considered low income, defined as having a percentage of the population living in poverty at or above the LA County	The station buffer area (1/2-mile from center of platforms) includes portions of 2 Census tracts. One of these Census tracts is characterized as having a population that is over 50% minority. Neither of these Census tracts is considered low income, defined as having a percentage of the population living in poverty at or above the LA County

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	Census tracts have a greater percentage of Limited English Proficiency (LEP) population than the threshold established by the Authority (5%). Lastly, only one of these Census tracts has an elderly population (ages 65 and older) percentage higher than the County average (11%).	County average (16%). All 3 of these Census tracts have a greater percentage of LEP population than the threshold established by the Authority (5%). Lastly, only one of these Census tracts has an elderly population (ages 65 and older) percentage higher than the County average (11%).	average (16%). Both Census tracts have a greater percentage of LEP population than the threshold established by the Authority (5%).	average (16%). Both Census tracts have a greater percentage of LEP population than the threshold established by the Authority (5%). Lastly, only one of these Census tracts has an elderly population (ages 65 and older) percentage higher than the County average (11%).
Community Resources	The station study area (1/2-mile from station platforms) contains 1 airport, 8 churches, 1 community center, 1 government facility, 2 hospital/clinics, 2 libraries, 7 parks/recreational uses, 1 police station, 1 transit site, and 2 schools.	The station study area (1/2-mile from station platforms) contains 1 airport, 4 churches, 1 government facility, 3 parks/recreational uses, and 1 school.	The station study area (1/2-mile from station platforms) contains 1 airport, 1 church, and 2 parks/recreational uses.	The station study area (1/2-mile from station platforms) contains 1 airport, 2 churches, 1 government facility, 2 parks/recreational uses, and 1 school.
Displacement of Community Resources	The following community resources are located within the station platform and would be potentially displaced. 1 school (R. Rex Parris High School) 1 existing parks/recreational use (Bike Trail 103E)	There are no community resources located within the station platform that would be potentially displaced.	There are no community resources located within the station platform that would be potentially displaced.	There are no community resources located within the station platform that would be potentially displaced.
Environmental Justice	The Palmdale Transportation Center Station Option has the potential to have direct and indirect impacts to community resources that are important to communities of EJ concern, given the proximity of communities of EJ concern to the proposed footprint. However, the proposed station would be located at the edge of established communities and is less likely to have community cohesion impacts.	As there are no residential parcels or community resources within the station platform, there is no potential for direct EJ impacts. However, there are several communities of EJ concern and other resources within the study buffer area. Therefore, there exists the potential for the Burbank Airport Station Option A to have indirect impacts to communities of EJ concern. However, the proposed station would be located at the edge of established communities and is less likely to have community cohesion impacts.	As there are no residential parcels or community resources within the station platform, there is no potential for direct EJ impacts. However, there are several communities of EJ concern and other resources within the study buffer area. Therefore, there exists the potential for the Burbank Airport Station Option B to have indirect impacts to communities of EJ concern. However, the proposed station would be located at the edge of established communities and is less likely to have community cohesion impacts.	As there are no residential parcels or community resources within the station platform, there is no potential for direct EJ impacts. However, there are several communities of EJ concern and other resources within the study buffer area. Therefore, there exists the potential for the Burbank Airport Station Option C to have indirect impacts to communities of EJ concern. However, the proposed station would be located at the edge of established communities and is less likely to have community cohesion impacts.
Noise and Vibration	Within 2,000 Feet Residential - 571 Church - 3 Park - 1 School - 2	Within 2,000 Feet Residential - 581	Within 2,000 Feet Residential - 106	Within 2,000 Feet Residential - 275
Change in Visual and Scenic Resources	The Palmdale Station platform is located adjacent to a small residential development along E Avenue P-14 and a commercial area with several empty lots. The station could be visible from the Doctor Robert C St Clair Parkway. The station platform is not expected to have adverse visual impacts, since the surrounding areas are mostly commercial and industrial land uses with vacant lots. The addition of the station platform could add order to the landscape.	This station platform is within the existing railroad ROW. Land use to the southwest includes industrial use associated with the Bob Hope Airport. Land use to the east includes commercial/industrial buildings with residential areas behind. San Fernando Blvd separates the station platform location with these land uses. Sensitivity is expected to be low, since the residential area is behind the industrial area. Contrast would also be low due to the existing urban nature of the landscape.	This station platform would be located within the Bob Hope airport property. The surrounding land is industrial use associated with the Bob Hope Airport. Sensitivity would be low due to the lack of residential or recreational uses in the area. Contrast would be low due to the existing industrial landscape character.	Visual impacts associated with Burbank Station Option C would be similar to Option B. Station Option C would be adjacent to N Hollywood Way and visible from that travel corridor. However sensitivity and contrast would still be low due to the same reasons described for Option B.

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Geological and Soil Constraints	<p>The station platform footprint is located outside Alquist-Priolo fault-rupture zones and CGS liquefaction hazard zones. No faults cross the station platform footprint.</p> <p>The station platform footprint is not located within a half-mile radius of a city of Los Angeles Methane Hazard Zone.</p> <p>The station platform footprint is not located in any dam-flood inundation zones.</p>	<p>The station platform footprint is located outside Alquist-Priolo fault-rupture zones and CGS liquefaction hazard zones. No faults cross the station platform footprint.</p> <p>The station platform footprint is not located within a half-mile radius of a city of Los Angeles Methane Hazard Zone.</p> <p>The station platform footprint is located in the Hansen Dam Flood Inundation Zone.</p>	<p>The station platform footprint is located outside Alquist-Priolo fault-rupture zones and CGS liquefaction hazard zones. No faults cross the station platform footprint.</p> <p>The station platform footprint is not located within a half-mile radius of a city of Los Angeles Methane Hazard Zone.</p> <p>The station platform footprint is located in the Hansen Dam Flood Inundation Zone.</p>	<p>The station platform footprint is located outside Alquist-Priolo fault-rupture zones and CGS liquefaction hazard zones. No faults cross the station platform footprint.</p> <p>The station platform footprint is not located within a half-mile radius of a city of Los Angeles Methane Hazard Zone.</p> <p>The station platform footprint is located in the Hansen Dam Flood Inundation Zone.</p>
Avoidance of Hazardous Materials	<p>Some risk of encountering aerially deposited lead and other metals in soil.</p> <p>Demolition of existing structures may encounter asbestos, lead-paint, and other hazardous materials.</p>	<p>The station platform is in an area with known contamination and cleanup. Contamination may have migrated into the station footprint from these locations.</p> <p>Construction may encounter contaminated groundwater if it extends 30 feet below ground level. The station is located within the San Fernando Valley Superfund Area 1, which has groundwater contaminated by volatile organic compounds.</p> <p>Some risk of encountering aerially deposited lead and other metals in soil.</p> <p>Demolition of existing structures may encounter asbestos, lead-paint, and other hazardous materials.</p>	<p>The station platform is in an area with known contamination and cleanup. Contamination may have migrated into the station footprint from these locations.</p> <p>Construction may encounter contaminated groundwater if it extends 30 feet below ground level. The station is located within the San Fernando Valley Superfund Area 1, which has groundwater contaminated by volatile organic compounds.</p> <p>Some risk of encountering aerially deposited lead and other metals in soil.</p> <p>Demolition of existing structures may encounter asbestos, lead-paint, and other hazardous materials.</p>	<p>The station platform is in an area with known contamination and cleanup. Contamination may have migrated into the station footprint from these locations.</p> <p>Construction may encounter contaminated groundwater if it extends 30 feet below ground level. The station is located within the San Fernando Valley Superfund Area 1, which has groundwater contaminated by volatile organic compounds.</p> <p>Some risk of encountering aerially deposited lead and other metals in soil.</p> <p>Demolition of existing structures may encounter asbestos, lead-paint, and other hazardous materials.</p>